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Momentum

An undergraduate research journal

Columbus State University

In memory of
Dr. Gregory Domin

Dr. Domin was Columbus State University's Assistant Provost for Graduate Education a professor for both the Political Science Department and the Masters for Public Administration Program. He regularly sponsored undergraduate research by taking students to the Georgia Political Science Association and he was a strong supporter of Momentum.

He will be greatly missed.

Vision Statement

Momentum advocates the presence of a diverse student population conducting independent studies. It serves as a platform to promote creativity, inquiry, and intellectual critique among undergraduates from all disciplines. Led by an Editorial Advisory Board, the journal conforms to the highest levels of academic honor by utilizing a blind review process that permits erudite submission from students across the disciplines. The journal's ultimate goal is to publish scholarly research among a wide range of captivating themes. *Momentum* accepts perspectives, creative inquiries, and quantitative and qualitative research at the undergraduate level.

Submission Guidelines

Students should submit to the journal by email to momentum@columbusstate.edu. The final paper must be a Microsoft Word document with a *.doc file extension. Submissions must include both the main body of the work and a cover sheet as described below.

Main Body

Length of the main body should be appropriate to the discipline, but may not exceed 5,000 words (excluding references). Font should be Times New Roman, 12 point, and double-spaced. Each page of the body should contain a header with abbreviated title, discipline the work was submitted under, and page number. Headers may appear on all submitted pages or may be on pages just with the main body of the work.

Cover Sheet

The cover sheet should be prepared in the order listed at the bottom of the webpage. The list of all authors and faculty members who contributed to, or assisted with, the research project must be available only on the cover sheet. This is for easy removal during the blind selection process.

Abstracts should be single-spaced and 200 to 300 words in length.

Any submissions that do not meet these guidelines will not be accepted. If you have any questions about length or general requirements, send an email to momentum@columbusstate.edu.

Cover Sheet should include: Title of article, Abstract (Limit 300 words), Author(s) and major(s), Lead author contact information (phone, email), Faculty mentor(s) and department(s), Biography of author(s) (limit 200 words total for all authors), Citation format of the paper (MLA, APA, or Chicago), and Disciplinary category which best represents the research style.

Momentum works under rolling submissions and will process articles throughout the year as they are received. The submission deadline for the next issue is approximately March 14, 2014.

Cover Contest

Momentum invites students to submit their works of art (including but not limited to photographs, paintings, drawings, etc.) to be featured on the cover of the next issue. Our journal is passed out to many individuals in the community, including alumni and donors, as well as other schools in the state of Georgia. This is a great way to have your art noticed. All pieces should portray Columbus State University, *Momentum*, or undergraduate research. Entries should be sent to momentum@columbusstate.edu by April 18, 2014

Letter from the Provost

Dear Friends,



I am delighted to announce this year's publication of *Momentum*, Columbus State University's undergraduate research journal. It is truly an exciting time to be involved in scholarly work at Columbus State University. Recently, Columbus State was recognized by U.S. News and World Report as one of the top 50 public universities in the South. The important intellectual work taking place on this campus has a resonance that is becoming national and even international in scope.

To my mind, undergraduate research is critical because from the creative synergy among our students and their faculty mentors come the ideas of the future, ideas that may hold the key to the economic future of the region, ideas that can immeasurably improve quality of life, ideas that make for the leaps in human thought and accomplishment.

Each year, *Momentum* improves in scope and breadth. Publication within the pages of this journal is a prestigious accomplishment. Congratulations to the scholars published herein and to the *Momentum* editorial staff

Sincerely,

A handwritten signature in dark ink, appearing to read "Tom Hackett".

Tom Hackett, Professor

Provost and Vice President for Academic Affairs

Letter from the Editor

Welcome everyone to the third volume of *Momentum*! It has been a privilege to be able to serve as Editor-in-Chief of *Momentum*. The production of this issue has truly been a learning experience for my fellow editors and myself. I had the great honor of working with *Momentum's* largest editorial staff to date. I could not be more proud of the diligence and dedication each staff member put into editing this journal. I would also like to thank my mentor and *Momentum's* advisor Dr. Kyle Christensen, whose advice and support greatly impacted the success of *Momentum*.



Going along with the legacy that the last editorial staff established, my vision for this issue was to continue growing *Momentum*. After careful consideration amongst the editors, beginning this Spring 2013 issue, *Momentum* began accepting submissions outside of Columbus State University. The change ran very smooth and it now allows for us to celebrate the academic achievements of our own Columbus State University students along with three other students from Georgia Southern University in Statesboro and Wesleyan College in Macon.

The growth and expansion that *Momentum* achieved in this Spring 2013 issue is a sign of Columbus State University's commitment to the importance of undergraduate research. I hope to see *Momentum* continue to grow in the upcoming years.

Jessica Canedo

A handwritten signature of Jessica Canedo in dark ink. The signature is stylized, with the first name 'Jessica' written in a cursive script and the last name 'Canedo' in a more formal, slightly cursive script.

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Inside this issue:

Media Usage and Learning Style Preference

10

Carla Burton

Columbus State University

Immigration Issues and Practical Reform

16

Gerald Chichester

Columbus State University

The Myth of Laissez Faire and the Contrivance of Capitalism

29

Alex Cole

Columbus State University

Integrating Manipulatives to Improve Fraction Concepts

36

Rachel Dunn

Georgia Southern University

Fundamentalism in the Face of Modernization: A Literary Case Study of "The Lottery"

54

Ford Fourqurean

Columbus State University

Characteristics of a Good Middle Grades Teacher

57

Katrina Vader

Georgia Southern University

Chinese Government's Special Economic Policy: A Case Study of Free Market in Zhejiang Province

67

Hoa Huong Quyng Nguyen

Wesleyan College

X-Ray Spectral Examination of Supernova Remnant DEM L241

73

Matthew Perry, Zachary Edwards, Brandon Furnish, Truman Williams, John Hood II, and Cameron McCarty

Columbus State University

Media Usage and Learning Style Preference

Author: Carla Burton

Faculty Mentors: Dr. Rose Danek

ABSTRACT

Children are introduced at an early age to learning from television. Long periods of television viewing could predispose children to prefer kinesthetic learning as an adult. This study attempted to find a relationship between the amount of television watched during childhood, preferred learning style as an adult, and impulse-control as an adult. Each of the participants (N=20) was asked to report amount of television watched as a child, complete the VARK Learning Style Questionnaire, and complete the Abridged Big Five-Dimensional Circumplex on impulse-control and conscientiousness. The data reported a positive correlation between amount of television watched as a child and preference of kinesthetic learning as well as a negative correlation between amount of television watched as a child and preference of read/write learning as an adult.

With the rise of the electronic age, there have been many advancements in the ways information is communicated to people. One of the most widely used methods is television. Many individuals perceive that receiving information via television is more realistic and easier than receiving information in print (Salomon, 1984). The preference of using television as the main form of receiving information may be due to people's learning style or attention span. The preference to use television to receive information may be due to people's perception of how they learn, also known as learning style, or the ability to maintain their attention.

There have been many research studies done comparing information delivery of information via audio, visual, and interactive/kinesthetic means and memory (Christie & Collyer, 2008; Austin & Strange, 2012; Salomon, 1984; Ricci & Beal, 2002). In a study designed to compare industrial ads and memory, information technology students were placed into 3 groups: postgraduates studying for MSc in Multimedia Systems, undergraduates studying for BSc in Multimedia Systems, and postgraduates studying for MSc in Multimedia Systems or User-Interface Design. First, the participants were given a form to familiarize themselves with the material. Second, the participants were shown a mixture of clips consisting of only video, only audio, or both audio and video. Finally, the participants were given a true/false test on the clips. The study reported that the information presented in an audio format only was recalled with lower scores than those presented with video and audio joined (Christie & Collyer, 2008).

Similarly, in a study designed to compare children's recall of a storyline, children were randomly selected into one of three groups: audio, where the story was only read to them aloud, audiovisually where they were read the story aloud and shown pictures that went with it, and interactively/kinesthetic which simulated television shows where children were asked to participate and go along with the storyline. After the story the children were asked to recall what the storyline involved. The results showed that younger children had poorer recall when they had been exposed to a storyline only by audio, and they have the highest recall when exposed to the storyline kinesthetically (Ricci & Beal, 2002). Studies like those listed above seem to suggest that people are more apt to follow a story line and be able to recall that story if the story is not just heard but also seen or acted out physically. Visual and audio information seems to hold attention with greater success, makes information easier to understand, and increases confidence in learning (Christie & Collyer, 2008). This perceived easiest route of learning could be due to the finding that more effort is needed in coding material to memory when it is read versus obtained visually or audibly. However, when compared to reading material, it is reported that while there is greater confidence in visual/audio material recall, there is not the same degree of accuracy. Information can easily be mistaken or falsely recognized, possibly due to the strong focus on visual details, such as the types of clothes someone was wearing or how they looked, instead of the information (Austin & Strange, 2012).

The ability of better retaining attention might possibly be related to impulse-control. Those who have low levels of impulse-control are easily aroused by the presence of different stimuli such as described above. The Myers Briggs Type Indicator compiled information from 1972 to 2002 and reported that the ratio of extroverts (classified as impulsive) to introverts (classified as stable) in the United States is roughly 50/50 ("How Frequent is My Type", N.D.). People falsely believe there are more extroverts to introverts though it is reported that 50% of the population in the United States search for stimuli from the world outside of them and the other 50% search for stimuli internally through mental reflection (Sato, 2005). This false belief could foster the use of educational television viewing by parents due to the capability of the interactive media to hold the attention of those impulse-driven children while attempting to provide information. However, in allowing the use of television as a universal learning tool, parents could be hurting those children who do have impulse-control. They could be conditioning the introverted children as extroverts to perceive that they prefer to accept information when delivered kinesthetically, instead of evolving their self-control, needed to promote other means of learning.

Learning Styles

Learning styles are the methods used when learning new information. Individuals usually report having a preferred or best method that works for them. The VARK Learning Style Questionnaire is a multimodal questionnaire designed to classify participants by their scores for each learning style: V for visual, A for aural, R for read-write, and K for kinesthetic (Dobson, 2010).

As defined by the VARK designer, Neil Flemming, visual learners are also called spatial learners because they perceive taking in information better when it is in the form of maps, diagrams, charts, and graphs to show relationships between ideas with the use of white space. Color coding is also effective for visual learners to show such a relationship (2011).

Aural or Auditory learners perceive that information is best obtained being heard or spoken. Lectures, discussions, music, and conversation where they are walked through the information seem to work best for them. Flemming also put emails in this category instead of read/write because emails tend to have a chat-like flow similar to a conversation when written with abbreviations, slang, and informal language. Aural learners do not only learn from other people speaking but can talk to themselves to reinforce the information as well. Often, they will repeat information aloud again or ask obvious questions just to have the information presented again verbally (Flemming, 2011).

Read/write learners perceive that information is best obtained when it is presented in text. This is the style most used by teachers when they assign students to compose reports, essays, and other written assignments to gain knowledge. People who view themselves as read/write learners often use PowerPoint, lists, dictionaries, quotations, the internet, and anything else written in text (Flemming, 2001).

Kinesthetic learners perceive taking in new information best with use of experience and practice in real life. Instances of kinesthetic learning include demonstrations, simulations, case studies, and practice videos and movies of real situations. The reality of the learning experience is what gives kinesthetic learners the best knowledge. If they can hold it, taste it, or feel it, kinesthetic learners perceive getting more out of the information presented. They rely more on their personal experiences than those reported by others (Flemming, 2011).

Lilienfeld (2009) claims there is no evidence to suggest students learn the best when teaching style is matched to a student's learning style; however, people seem to have a noticeable preference for the particular style in which they like to receive new information (Flemming, 2011). This preference could have developed through a conditioned response of what learning style had been effective in the past such as television keeping the attention of young children to allow learning. However, it is nothing more than a preference, it is not set in stone. Students must develop every learning style to be better adjusted and well-rounded scholars throughout life instead of defaulting to the preferred learning style, the easiest route of learning. If students continue to rely on a singular learning style, they will not cultivate the self-control needed to master other learning styles, namely reading, resulting in increased impulsivity (O'Connor & Jackson, 2007).

Impulsivity

The Abridged Big Five Circumplex (AB5C) places impulsivity under the section of impulse control which is directly related to conscientiousness and falls under the facet of emotional stability (DeYong, Quilty, & Peterson, 2007).

On review of several impulsivity questionnaires, four dimensions of impulsivity have been identified. The first dimension is referred to as urgency or impulsiveness. This includes neuroticism which is classified by psychologists as a personality trait characterized by instability, anxiety, and aggression. The second dimension is called sensation-seeking and includes extroversion, when people seek sensation from the outside world instead of within themselves. The third dimension is referred to as lack of premeditation or deliberation, also known as acting without first thinking. The fourth dimension is lack of perseverance or self-discipline (DeYoung, 2010).

The third and fourth dimensions are also related to the category of conscientiousness. Conscientiousness refers to the careful thinking and planning associated with actions. Therefore, when tested on levels of impulsive control and conscientiousness with the AB5C, a participant should score higher on impulsivity and lower on conscientiousness or vice versa since they are on opposite ends of the emotional stability spectrum, and it is inconceivable to be both impulsive and conscientious (O'Connor & Jackson, 2007).

Present Study

The present study attempts to discover the relationship between frequent television viewing during early childhood, impulsivity/conscientiousness, and preferred learning style as an adult. The hypotheses are participants who report watching long amounts of television per day as a child will score higher on preference for audio and kinesthetic learning as an adult. The second hypothesis is participants who report watching long amounts of television per day will score low on impulse-control as an adult.

Method

Participants

The study consisted of 20 students pooled from the Columbus State University student population through the Columbus State IRB ethical guidelines. There were 5 males and 15 females; 6 freshmen, 6 juniors, and 8 seniors. The mean age was 22 with a standard deviation of 1.47.

Measures

The survey research focused on three main areas:

The amount of television watched as a child with a researcher-designed television survey asking participants to estimate the amount of television they watched on a daily basis between the ages of four and six years old, ranked as none, 30 minutes, 1 hour, 1 ½ hours, 2 hours, and 3+ hours.

The preferred learning style as an adult as composed by the VARK Learning Style Questionnaire tested for reliability and validity by Dr. Walter Leite, University of Florida Research & Evaluation Program which consists of problems such as: You have a problem with your heart; with optional answers, such as, gave you something to read explaining what was wrong, used a plastic model to show what was wrong, showed you a diagram of what was wrong, or described what was wrong (Flemming, 2011).

The impulse-control and conscientiousness score composed from the Abridged Big Five-Dimensional Circumplex (AB5C) used by college psychology students with ratings of agreement to statements, such as, I talk even when I know I should not.

Procedure

Participants were given an informed consent form approved by the IRB to read and sign. After consent was obtained, the participants were asked to fill out the AB5C survey on impulse-control and conscientiousness, VARK Learning Style Questionnaire, and the researcher-designed television survey, which

were arranged in random order. After completing the surveys, participants received 1 extra credit point in the SONA system and were debriefed.

Results

The Correlational study reported a statistically significant positive correlation, $r(18) = .48, p = .03$, with the amount of television watched as a child and preference towards kinesthetic learning as an adult as well as a statistically significant negative correlation, $r(18), p = .01$, with the amount of television watched as a child and preference towards read/write learning as an adult. There was no significant statistical relationship, $r(18) = -.03, p = .9$, reported between the amount of television watched as a child and impulse-control score.

Discussion

The study only consisted of 20 participants who were currently enrolled in college. A larger sample may help show a possible connection with impulsivity and learning style. Although the findings were not statistically significant, the relationship could still exist between impulsivity and the amount of television watched. With a larger sample, the findings could become statistically significant. Also, because all of the participants were college students, they may have already learned to improve their impulse-control in order to advance academically and get into college. A sample including non-college participants would be helpful in addressing this confound and could support the claim that successful students develop other learning styles to achieve academic success by increasing their self-control.

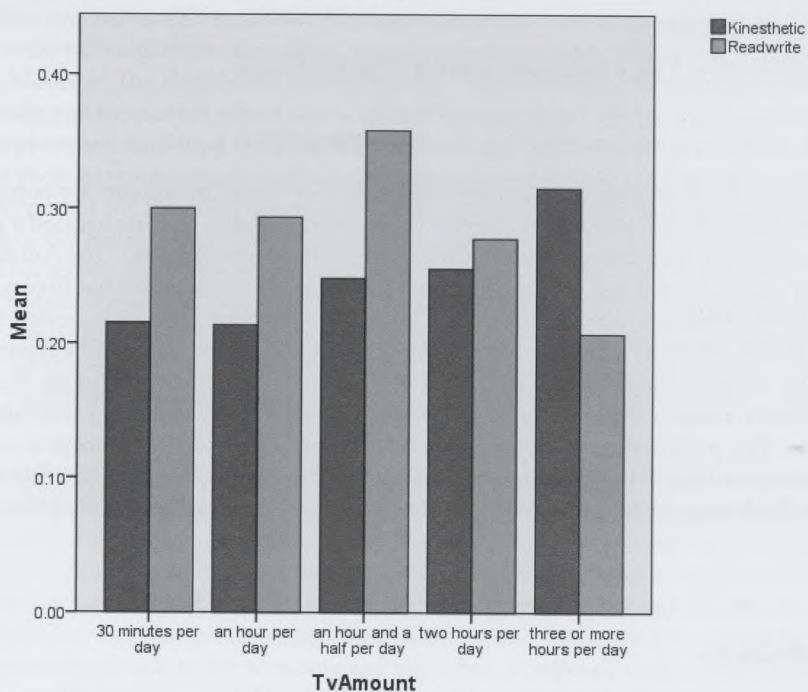
It cannot be said definitively whether a higher preference for kinesthetic learning and lower preference for read/write learning causes children to watch more or less television or if watching more or less television causes a higher preference for kinesthetic learning and lower preference for read/write learning (see Appendix A). Also, because the television survey was retrospective, there could be issues with the accuracy of the answers provided regarding the amounts of television actually watched. Controlled longitudinal studies should be done to monitor young children through development with emphasis on learning style and exact amounts of television watched to attempt to find directionality of the findings. However, since this study suggests large amounts of television viewing correlates with lower preference for read/write learning and higher preference for kinesthetic learning, students especially should be aware of the studies which report higher recall and accuracy with material presented in text even though real life examples and video may seem to be more efficient when taking on new information. The findings support the idea that children should be limited in the amount of time allowed to watch television in order to allow for proper development of other learning styles such as reading, audio, and visually at an early age so they will be more adapt to the world of academia later in life.

In conclusion, many studies have been done to evaluate memory and recall of information with different methods of delivery including audio, visual, and a combination, such as with television. The data suggests that use of television keeps the attention of children while working as a teaching aid and is on the rise in the country. It is conceivable that after years of learning information through educational programs, children feel a sense of ease with taking in information when delivered through kinesthetic means of real-life examples and demonstrations. This preference for learning through examples is an especially important issue to understand in the scholarly world. There are often times when students cannot learn concepts through real-life examples or demonstrations and must utilize one of the other learning styles to understand the material such as read/write. It has already been shown that even in college students kinesthetic learning promotes a false sense of self-efficiency and confidence in memory compared to read/write, but when looking at the accuracy of that information, the levels are much lower than when reading information (Christie & Collyer, 2008). This is an important finding which should be known and understood by students across every discipline. If students focus too much on one particular learning style, such as kinesthetic, due to ease of use or perceived self-efficiency, the other learning styles are not properly developed. Students could then feel unprepared or unable to complete course assignments later in life and could lead to increased dropout rate in educational programs.

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Appendix A



Results of correlation between amount of TV watched as a child and preferred learning style determined by VARK Learning Style Questionnaire.

Immigration Issues and Practical Reform

Author: Gerald Chichester

Faculty Mentors: Dr. Kyle Christensen and Dr. Masako Okura

ABSTRACT

From a fiscal standpoint, many are concerned that illegal immigrants are putting a strain on this country's economic resources. Despite popular belief, several studies have recognized a positive relationship between immigration and the economy (legal as well as illegal immigration). The American Dream of hard work, better standards of living, and possible movement up the social ladder has drawn many illegal aliens to come to the U.S. Obama's highly controversial bill, The Dream Act 2012, was created to allow hundreds of thousands of illegal immigrants who came to the U.S. as children to be safe from deportation and able to work and live in this country based on a certain educational or employment criteria. This Act is difficult to justify, because it rewards the undocumented workers in our country and may encourage more acts of illegal immigration. This proposed study will examine The Dream Act 2012, and propose a more realistic alternative that will incorporate legal immigration along with multiple outsourcing strategies that will provide corporations and schools with an opportunity to acquire skilled workers and gifted students from around the world.

Immigration Issues and Practical Reform

Introduction

Illegal immigration has remained a serious issue in the United States. However, contrary to popular belief, illegal immigration has resulted in a number of positive influences on the country. In an attempt to salvage the desired qualities of illegal immigration, the Obama administration has established The Dream Act 2012. This highly controversial bill grants hundreds of thousands of illegal immigrants who came to the United States as children safety from deportation. It also allows them to work and live within the country based on a certain educational or employment criteria. This research paper will take a closer look at the real affects illegal immigration has on the United States. It will also examine the Dream Act and its criticisms, and propose several reforms that will provide a more realistic, effective alternative. This alternative will provide corporations and schools within the United States the opportunity to, legally, acquire skilled workers and gifted students from around the world. This paper will also assess the true dangers behind illegal immigration, and provide ways to maximize the positive effects of illegal immigration while eliminating illegal immigration altogether. Lastly, this paper will examine why there is such an outstanding amount of immigration to begin with, and analyze several recent immigration programs that have led to immense conflict and controversy. Illegal immigration will only continue to be an issue until we implement the correct reforms.

Effects of Illegal Immigration

The majority of the American people misconstrue the real effects of illegal immigration. Many believe that illegal immigration is an issue of undocumented workers taking all of the lower income jobs in America. Many also believe that illegal immigration puts a strain on the country's resources economically without paying back to the government through taxes (West, 2011). However, a number of studies disprove these common misconceptions. In fact, there are a number of positives that result from illegal immigration that warrant no mention in the discussion (West, 2011). Writer Tim Kane identifies a number of positive outcomes that result from illegal immigration in his article "The Real Problem with Immigration... and the Real Solution." Kane writes that honest assessments acknowledge that illegal immigrants bring real benefits to the supply side of the American economy, which is why the business community opposes a straightforward crackdown (Kane, 2006). In the article, he writes that he understands that there are economic costs as well. These include America's generous social insurance institutions along with the cost of securing the border. Despite these costs, Kane suggests that the argument that immigrants harm the American economy should be dismissed out of hand (Kane, 2006). He also affirms that the population today includes a far high-

er percentage (12 percent of foreign-born Americans than in recent decades), yet the economy remained relatively strong, with higher total GDP, higher GDP per person, higher productivity per worker, and more Americans working than ever before (Kane, 2006). Although this article uses instances prior to the recent economic falls of the country, it still shows that illegal immigration helps more than it hurt economically. Kane quotes Stephen Moore of *The Wall Street Journal* saying, "The increase in the immigration flow has corresponded with steady and substantial reductions in unemployment from 7.3% to 5.1% over the past two decades, and the unemployment rates have fallen by 6% for blacks and 3.5% for Latinos" (2006). Kane believes that immigrants boost national output, enhance specialization and provide a net economic benefit. The 2005 Economic Report of the President devotes an entire chapter to immigration and reports, "A comprehensive accounting of the benefits and costs of immigration shows the benefits of immigration exceed the costs" (Kane, 2006). This report also shows that immigrant unemployment rates are lower than the national average and that a 10% share increase of immigrant labor results in roughly a 1% reduction in native wages which is a very minor effect (Kane, 2006). Most immigrant families have a positive net fiscal impact on the U.S., adding \$88,000 more in tax revenues than they consume in services. Not to mention that the Social Security payroll taxes paid by improperly identified workers has led to a \$463 billion funding surplus (Kane, 2006).

Kane also looked at the macroeconomic aspect of heavy immigration and its effects on the economy in terms of insourcing and outsourcing jobs. The term insourcing refers to the delegation of a company tasks to a department within the company as opposed to outside the country. Outsourcing is a completely opposite labor strategy as it focuses on companies obtaining goods or services from a supplier outside of the country. Kane says that the increasing worries about outsourcing jobs to other nations are just one more reason to attract more jobs to America by insourcing labor (Kane, 2006). Since workers are allowed to work inside the U.S., they immediately add to the economy and pay taxes, as opposed to the government not receiving tax money when a job is outsourced (Kane, 2006). This affirmation means that capping the number of H-1B visas limits the power to attract highly skilled workers, and thereby weakening U.S. firms' competitiveness. An H-1B visa refers to a non-immigrant visa of the United States under the Immigration and Nationality Act. Although some critics of the insourcing strategy worry that native-born Americans lose their jobs in favor of low-wage migrant workers, recent studies show that these concerns are unwarranted. While the presence of low-skill migrant workers can be construed and misjudged by low-skill native workers, the economic effects are the same as those of free trade which are a net positive and a leading cause of economic growth (Kane, 2006). Kane quotes a National Bureau of Economic Research study by David Carr that found, "Overall, evidence that immigrants have harmed the opportunities of less educated natives is scant" (Kane, 2006). The consensus of the vast majority of economists is that the several economic gains from openness to trade and immigration far outweigh the cases of economic loss. Kane cites that in the long run, evidenced by recent years, the gains are higher and growing (Kane, 2006).

Although Kane mentions a number of positives that have come from immigration (illegal or not), he also recognizes that there are some serious issues that can harm countries in ways that the common public does not foresee. Kane expresses that globalization challenges America's exceptional status as a "nation of immigrants," which is making both migration and terrorism much easier (Kane, 2006). Globalization refers to the process of international integration arising from the interchange of different cultural aspects like world views, customs, products, and ideas. Simply put, globalization describes the processes that promote world-wide exchanges of national and cultural resources. The biggest challenge for policy makers lays in distinguishing imaginary immigration problems such as immigrants taking all the jobs and using all the country's resources from the real problem. As described by Kane, illegal immigration into the United States is at a massive scale (Kane, 2006). More than 10 million undocumented aliens currently reside in the United States, and that population is growing by 700,000 per year (Kane, 2006). While the presence of so many aliens speaks to the attractiveness of America, it also shows how dangerously open the borders of this country are and how easy it has become to enter and live in this country illegally. Usually, illegal immigrants enter the United States to find better jobs, and as discussed previously, it adds value to the economy of the United States. However, they also take away value by weakening the legal and national security environment (Kane, 2006). Kane highlights such a problem when he said, "with three out of every 100 people in America [legally] undocumented, there is a profound security problem" (Kane, 2006). Although most illegal immi-

grants pose no direct security threat, the astounding amount of immigrants unaccounted for distorts the law, compromises resources, and creates a cover for terrorists and criminals. Kane explains that the real problem is security rather than the economy, and efforts to curtail the economic influx of migrants worsens the security dilemma by driving many migrant workers underground, thereby encouraging the culture of illegality (Kane, 2006). The real issue with undocumented, illegal workers is that they routinely break the law, which makes the job of terrorists easier. Illegal immigrants can indirectly affect the United States' economy. The costs of combating and controlling terrorism can be both extremely high and extremely real.

Pia Orrenius' article called "The Economic Consequences of Amnesty for Unauthorized Immigrants" gave a different perspective of the negative effects of immigration on the United States. At the beginning of the article, Orrenius cited a detailed background of unauthorized immigration. This accurately described the overwhelming amount of undocumented immigrants, along with several occurrences in the past that have failed to combat the issue. Orrenius' analysis encompasses information all the way back past the 1970's when unauthorized immigration in the United States was not a substantial issue. Orrenius writes that the undocumented population rose from a few hundred thousand, primarily agricultural workers, in the late 1960's to several million, mainly living in urban areas, in 1980 (Orrenius, 2012). This increase resulted from the United States policy shifts that cut off the passage ways of legal entry, such as the discontinuation of the Bracero Temporary Farm Worker Program in 1964. At this time, the majority of unauthorized immigrants crossed the border illegally, but others (as stated above) overstayed or violated the terms of a visa, such as working while on a non-work visa. Orrenius goes on to estimate that the unauthorized immigrant population increased by about 500,000 annually during the early 2000s (Orrenius, 2012). This number only results in an increase as it became considerably easier to enter the country illegally. Given the return migration, Orrenius explains, the inflow of unauthorized immigrants was even larger, averaging 850,000 per year during the period 2000 to 2005 (Orrenius, 2012). Mexico, as asserted by many immigration analysts, is the main source country of undocumented immigrants, accounting for almost 60% of the unauthorized population (Orrenius, 2012). There is still a noticeable discrepancy in the relative strength of the United States and Mexican economies which proves to be one of the fundamental drivers of illegal immigration. Unauthorized immigration increases when the United States economy improves or the Mexican economy weakens.

Orrenius continues his article with an examination of the effects illegal immigration has on the labor market while drawing a number of policy implications. Orrenius writes that legalization of undocumented workers removes the risk of employer sanctions and it allows immigrants to move to better jobs and earn higher returns on their education (Orrenius, 2012). Although undocumented workers continue to find work and earn a living, legalizing them would result in even more opportunities. The status of an undocumented worker limits the productivity of the worker and makes him susceptible to multiple types of exploitation. Orrenius goes on to assert that legalization programs have several fiscal effects (Orrenius, 2012). On the tax side, income and payroll tax revenues are likely to increase as workers move onto the books rather than being paid "underneath the table" (Orrenius, 2012). Orrenius also cited two policy implications that emerged from prior amnesty experiences in the United States. First, Immigration Reform and Control Act (IRCA) did not achieve its goal of reducing illegal inflows and the size of the undocumented population (Orrenius, 2012). Secondly, economic impacts would have been modest at best (Orrenius, 2012). Although economic impacts are not the main concern, having a large undocumented workforce weakens the ability of the United States government to enforce labor market regulations, reduces tax revenues, and harms competing workers.

Writer Julie L. Hotchkiss also assesses how immigration negatively affects the United States in her article, "The Wage Impact of Undocumented Workers." In her article, Hotchkiss explains that workers of certain companies experience effects when the company hires undocumented workers. A documented worker employed by a firm that hires undocumented workers can expect to earn .15 percent less than if employed by a firm that does not hire undocumented workers (Hotchkiss, 2012). Hotchkiss continues to assert that in sectors where there are opportunities for task specialization and benefits from communication skills documented workers can expect to earn a wage premium of less than 1 percent from being employed at a firm that hires undocumented workers (Hotchkiss, 2012). Although this discrepancy may not seem to be a lot, the number of employees and the money loss in these cases is astounding. The money loss truly adds up to a large amount of money lost by citizens or documented workers to undocumented workers.

Hotchkiss also identifies two of the most recent federal efforts to address the concerns of the public about undocumented immigration, the IRCA (Immigration and Control Act of 1986) and the IIRIRA (Illegal Immigration Reform and Immigrant Responsibility Act of 1996) (Hotchkiss, 2012). Both of these laws passed in response to the growing population of unauthorized immigrants, even though they had two relatively different approaches in addressing the concerns spawned by such dramatic growth. The IRCA incorporated two amnesty programs for unauthorized immigrants. The focus for the IIRIRA, however, was border enforcement.

For the fourth and final article assessing immigration effects on the United States, Jean Baldwin Grossman performs and discusses an empirical study in her article "Illegal Immigrants and Domestic Employment." In this article, Grossman uses a straightforward general equilibrium model to explore the common allegation that illegal immigrants take jobs away from native-born workers (Grossman, 1984). Although illegal immigrants do not directly take away jobs from native born workers, Grossman finds an intriguing, negative relationship in multiple situations involving illegal immigrants and documented workers. Grossman writes that the simulation of the effect of an increase in illegal immigration shows that the distribution of the immigrants among industries is critical in determining their effect on employment (Grossman, 1984). She solidifies this point with an example of illegal immigration in the agricultural sector. If two-thirds of the illegal immigrants have jobs in the agricultural sector, an increase in illegal immigration will increase domestic unskilled unemployment, but if only half of illegal immigrants have jobs in that sector, an increase in illegal immigration will lead to a decline in domestic unskilled unemployment (Grossman, 1984).

While this section discussed several positives of illegal immigration effects, significant problems still remain that need to be analyzed and rectified moving forward. As Kane's article stated above, from a point of GDP, immigration is serious and productive to the United States whether it is illegal or not. The mass immigrants that flock to the United States speak to how successful the country has been and its worldwide perception. This also disproves the "harm" that illegal immigration causes to the economy of the United States. As Kane's article and other referenced articles can attest, illegal immigration has several negative effects on the country and its people. Although authors Orrenius, Hotchkiss, and Grossman all find negative illegal immigration effects such as strict labor market regulations, reduced tax revenues, and harmed competing workers; Kane describes the most salient issue in illegal immigration, in national security. Terrorism, if not contained, can cause a number of problems for the United States. Terrorism remains a significant concern economically, politically, and in society (Nadadur, 2009). After assessing the real problems of illegal immigration in the United States, this essay takes a closer look at several recent immigration programs that have led to immense conflict and controversy for its reforms and purpose.

Recent Immigration Programs

In an effort to combat the current and the real issue of immigration, several states have tried their hand at immigration reform. Although their intentions are good, and their focus is in the right place, these immigration programs have caused more turmoil than solutions in the fight against immigration. Alfonso Serrano touches on some of the recent immigration turmoil in his Time article, "Why Undocumented Workers Are Good for the Economy." The main focus of the article is Arizona's SB 1070; an immigration bill called the mother of all state immigration laws. Serrano writes that the bill has made it a crime to be an undocumented immigrant and it spawned a flurry of copycat bills in state legislatures across the country in 2011 (Serrano, 2012). These states include Utah, Indiana, South Carolina, Georgia, and Alabama. All of these states signed immigration bills into law in 2011; while over two dozen states rejected Arizona style measures (Serrano, 2012). The main concern of these states was economic issues of immigration. As Serrano writes, economic woes alarm these states and eventually thwarted efforts to pass restrictive immigration reform amidst an already trying economic climate (Serrano, 2012).

Despite Arizona's intentions to help the economic state of the state, Serrano writes that according to several studies the SB 1070 unfortunately only worsened Arizona's fiscal woes. (Serrano, 2012). This can be attested by the losses in GDP the state endured after implementation of the bill. Serrano explains that in the few months after the bill passed, Arizona's economy lost \$141 million, including \$45 million in the hotel and lodging cancellations and \$96 million in lost commercial revenue, according to a joint study by the Center for American Progress and the Immigration Policy Center (Serrano, 2012). This bill affected many

aspects of Arizona's economy, including tourism (a significant part of Arizona's economy). Serrano confirms this statement when he says a drop in tourism occurred which resulted in an estimated 2,761 jobs lost, resulting in \$253 million lost in economic output (Serrano, 2012). The U.S. Court of Appeals for the 9th Circuit blocked most of SB 1070's provisions. Serrano writes, however if they are ever fully implemented, the law would eliminate an estimated 580,000 jobs for immigrant and native-born Arizonans, shrinking the state's economy by \$48.8 billion (Serrano, 2012). These figures do not include the \$1.9 million Arizona has spent to defend the state from lawsuits, which have forced Governor Jan Brewer to establish a legal defense fund for contributions (Serrano, 2012). The immigration bill meant to help with the economic situation of Arizona has done more harm than good and has created wide discontent amongst many people.

Even though, Arizona continued to have a number of fiscal failures, Alabama has followed in Arizona's footsteps and approved its own immigration law in September (Palivos, 2009). According to a widely cited study by economists at the Center for Business & Economic Research at the University of Alabama, their bill is more parasitic than Arizona's and could result in a \$10.8 billion loss to the state's GDP (Serrano, 2012). This is mostly due to reduced demand for goods and services provided by Alabama businesses (Serrano, 2012). Professor Samuel Addy, who led the study, estimates that the loss of 40,000 to 80,000 undocumented immigrants would result in 70,000 to 140,000 lost jobs in Alabama, which amount to \$1.2 to \$5.8 billion in lost earnings (Serrano, 2012). This greatly contradicts with the old thought of illegal immigration putting a strain on the economy. An additional \$57 to \$264 million would be lost in state income and sales tax collections (Serrano, 2012). Many studies are starting to see the real economic benefits that come with illegal immigration. The libertarian CATO Institute argues in a recent report that comprehensive immigration reform, which would pave the way to citizenship for the roughly 12 million undocumented immigrants, would yield at least 1.5 trillion in added GDP over 10 years as a result of increased consumption, job creation and additional tax revenue (Serrano, 2012). In this scenario, California would see a \$5.3 billion increase and Arizona would generate a \$1.6 billion increase (Serrano, 2012). The best solution for states with such radical immigration issues is finding a way to either legalize or pardon the remaining undocumented immigrants that are making such notable contributions to the economy of those states.

Some states have avoided Arizona's path. Serrano cites Kentucky as one of those states; Kentucky concluded that passing Arizona-like legislation would cost the state up to \$89 million annually. Mostly in training additional law enforcement officers and personnel in order to implement the measure, according to a state senate-funded study (Serrano, 2012). Florida, Kansas, Texas, and Mississippi all agree that such immigration reform is detrimental to their respective states. In 2011, the Florida Chamber Foundation argued that immigrant workers add \$4.5 billion to the state's coffers every year in the form of tax revenues (Serrano, 2012). Business groups in Kansas, Texas, and Mississippi produced similar studies that helped squash Arizona-style legislation (Serrano, 2012). Ali Noorani, the Executive Director of the National Immigration Forum said of SB 1070 in Serrano's article, "it is not an economic growth strategy, but moral questions and public safety concerns are part of the solution. It is a combination of business, bibles and badges" (Serrano, 2012).

While some states suffer the consequences of the stricter immigration reforms, others look to take advantage of the opportunities that undocumented immigrants offer. Serrano exemplifies both these cases as he talks about issues in Alabama and Georgia and improvements in Utah. Serrano writes that farmers in Alabama and Georgia have been especially hit hard by state immigration laws, with farmers forced to leave produce to rot in their fields after immigrant workers have failed to show up for work (Serrano, 2012). He continues to support this claim as he cites that in Georgia, 56% of farmers say they have trouble finding farm workers, and the Georgia Agribusiness Council says that migrant labor shortages could cost state farmers between \$300 million to \$1 billion (Serrano, 2012). Some states have recognized and accepted the benefits that undocumented workers bring as Utah approved a ground-breaking guest worker law in 2011 that will allow undocumented immigrants to live and work in the state as long as they pass background checks and pay fines (Serrano, 2012). Serrano claims that the Utah law, which goes into effect in 2013, has inspired copycats of its own in Kansas, Oklahoma, and New Mexico (Serrano, 2012). All these states face several agricultural labor shortages and have recently structured guest worker bills similar to that of Utah.

Board's article, "Arizona's woeful immigration law takes effect" supports several of the claims made in Serrano's article. Board writes, after a two-year struggle, a federal judge finally authorized Arizona law

enforcement agencies to require officers to check the immigration status of anyone they suspect is in the country illegally (Board, 2012). After this overly controversial bill passed on the week of September 20th, 2012, wearing the wrong clothes, speaking with the wrong accent or having the wrong skin color could land some in hot water in Arizona (Board, 2012). The state's "show me your papers" provision, seen as one of the most bitterly contested parts of the obnoxious immigration law enacted in 2010, is the second such measure to receive a green light from federal courts. The first was from Alabama, where a similar policy was implemented in 2011 (Board, 2012). The "show me your papers" provision requires police to investigate the immigration status of people that they suspect to be undocumented. This provision clearly invites racial profiling by local law enforcement and puts a target on people of color in Arizona. Board supports this claim as he says that according to a recent report by the National Immigration Law Center, an immigrant advocacy group, law enforcement officers have created an "environment of racial profiling" that has encouraged private citizens to discriminate and abuse people they regard as foreign (Board, 2012). Board went on to say that the report, based on thousands of calls to a hotline, recounted instances of Hispanics, including legal residents, repeatedly stopped by police on flimsy pretexts and, in some cases, subjected to prolonged roadside detentions (Board, 2012). Considering the makeup of Arizona's population, they have a far larger Hispanic population than that of Alabama, this would lead Hispanic residents to believe that such a provision would lead to unfair treatment, regardless of their immigration status. Although the Supreme Court upheld Arizona's "show me your papers" provision, the justices warned that it could be struck down if it gave rise to a documented pattern of racial profiling or if it caused detentions to be prolonged.

Board continues to reveal flaws within the law as he affirms that federal immigration authorities have made it clear that they lack the resources to pick up and deport illegal immigrants if they are neither repeating offenders nor threats to public order or national security (Board, 2012). Many people are predicting that this Arizona law is unlikely to result in an increase in deportations. Board writes that the probable outcome will be to deepen the climate of hostility for Hispanics, legal and illegal, in a state heavily dependent on immigration for its economic well-being (Board, 2012). As referenced in the articles mentioned above, to improve states economically and control immigration in the area altogether, states have tried several different immigration reforms. The actual results of these reforms were the exact opposite as the new immigration laws have cut into the economy of the state and numerous people have lost their jobs because of the strict immigration laws. Certain provisions in the new immigration laws also led to immense controversy for native born or legal Hispanics of the area. While states continue to search for an immigration solution, many people search for the answer to another question. If illegal immigration causes so many problems and confusion, why do people not just enter the country with legal documentation? The next section of this paper entitled "The Legal Struggle" analyzes this question and several answers. Immigrants' choice to risk several serious consequences and migrate illegally into the country tells a lot about how poor the system of legal immigration is. Stuart Anderson, an author for the National Foundation for American Policy speaks about several of these issues in his article, "Legal Immigrants: Waiting Forever." Anderson asserts that many people do come here legally but processing delays on families and employment-based immigration quotas legislated by Congress result in significant wait time and much frustration (Anderson, 2006). Many immigrants that seek legal entry into the country wait a number of years for approval and several never receive it. Anderson writes that those who "play by the rules" are likely to wait many years to become a lawful permanent resident, even if they receive sponsorship by an employer or a family member (Anderson, 2006). Moreover, those seeking to become citizens must also endure long processing delays in the quest for naturalization (Anderson, 2006).

The Legal Struggle

Anderson elaborates on this long process as he states that waiting times for green cards (permanent residence) in the Skilled Workers and Professionals category have considerably worsened in the past few years. The current waiting time for a newly sponsored high skill immigrant in this category exceeds five years (Anderson, 2006). Analyses of future demand and pending backlogs indicate the problem is likely to worsen unless Congress changes the numerical limits on employment-based immigrant visas (Anderson, 2006). Anderson also alludes to people sponsoring family members for immigration. He writes that forward progress has stopped on waiting lists for the past year (Anderson, 2006). Siblings of U.S. citizens can expect to wait eleven to twelve years from today before immigrating to America (twenty-two years if from the Philip-

pinos) (Anderson, 2006). In his article, Anderson describes a near hopeless situation for unmarried adult children who anticipate waiting about six years, but thirteen years if from Mexico, and 14 years if from the Philippines (Anderson, 2006).

For immigrants, regardless of age or situation, the legal struggle continues. Anderson states that a spouse or minor child of a legal resident (green card holder) from Mexico has a 7-year wait (a 5 year wait if from other countries) (Anderson, 2006). Married children of United States citizens have to wait at least seven years to immigrate. This adds to the inefficiency to hire new skilled foreign nationals inside the United States for many months at a time (Anderson, 2006). Since it can take five years or more for a U.S. employer to sponsor a skilled foreigner for permanent residence (green card), the availability of H-1B visas is crucial. Otherwise skilled foreign nationals, particularly graduates of United States universities, could not work or remain in the United States (Anderson, 2006).

In his article, Anderson also touches on the fiscal challenges that produce immigration. Anderson writes that government fees have piled up for employers hiring skilled foreign-born professionals. Government-imposed fees related to H-1B visas exceed \$3,000 for individuals hired in that status (Anderson, 2006). Anderson also writes that United States companies have paid more than \$1 billion in H-1B training and scholarship fees since 1999 (Anderson, 2006). An application for a family-sponsored immigrant in the United States seeking to gain permanent residence through an "adjustment of status" (1-485) application takes nearly three years in New York (119 weeks), nearly a year and a half in Chicago (72 weeks), and more than a year in Miami (64 weeks) and Dallas (62 weeks) (Anderson, 2006). Compared with 2004, these wait times are longer or show no improvement in seven of the nation's largest cities, with the exception of Los Angeles (Anderson, 2006).

Ridiculous delays for legal entry to this country have continued for several years. Americans have not realized the struggles that immigrants go through to play by the rules and enter the country legally. For example, Anderson states that in order to gain an interview for a visitor visa at a United States consulate it currently takes 169 days in Mumbai (Bombay), India, 114 days in Calcutta, 70 days in Tel Aviv, 38 days in Manila, and 37 days in Caracas (Anderson, 2006). Anderson concludes his paper with several strategies to improve the extended delays immigrants must endure to enter the country legally. He writes that in addressing immigration policy, Congress must examine the need to expand green card quotas for family-sponsored and employment-based immigrants (Anderson, 2006). He also affirms that to ensure the continued flow of talent into America; it also must address the necessity of an increase in the H-1B cap for skilled professionals and sufficiently liberalized policies toward international students (Anderson, 2006). To shorten the impossible delays of government agencies, efficiency is needed for the overall approach and processing applications. Companies now pay larger fees, suffer longer waits, and obey stricter regulations than before. This impact affected employers, but not as much as individuals. Immigration denies the opportunity to work for several people, while others remain in limbo for several years due to inefficient green card quotas. The correct reforms will ensure that those seeking to immigrate legally and become part of America will no longer be, as it seems to them, waiting forever (Anderson, 2006).

Luis Rivas, author of the article "In our Broken System, Legal Immigration Favors the Privileged," supports many of the views and concerns that surfaced in Anderson's article while adding a new perspective to the legal struggle of immigrants. Rivas's article, however, focuses on the struggle of immigrants who are underprivileged or poor in the immigration process. Rivas writes that obtaining citizenship in this country when poor is difficult and costly (Rivas, 2010). This results in many immigrants opting to enter the country illegally or overstay their visas. The most common way immigrants become illegal is when they overstay a documented visa. In 2006 roughly half of all immigrants became illegal by overstaying their visas (Rivas, 2010). Rivas continues to dive into this issue as he writes that the United States immigration system purposefully favors potentially higher earning immigrants, arguably the ones less in need of immigrating into the United States in terms of finding better job opportunities and an overall betterment of family life (Rivas, 2010). This can be deduced from several visa policies that give treatment to immigrants that have degrees, manager positions, or other unique abilities. Most of these people could make an honest living working in their own country.

This long immigration process to become a citizen of the United States substantially depends on money. To become a legal permanent resident or a citizen, money is imperative. The working poor, the majority of whom are not fully educated about the necessary legal steps to obtain permanent residence status, cannot afford the wait that immigrants face. The luxury of waiting years, even if it is only two, is not an option for a man or family that is well below the poverty line of Mexico or El Salvador. This level is a radically lower level than that of the United States- approximately \$4 to \$5 a day in Mexico and approximately \$1 to \$3 in El Salvador (Rivas, 2010). The United States immigration policy is unfair to those most in need of immediate permanent residency, the working poor. Discrimination, charging fees, unrealistic years of waiting, complicated forms and language all act against those most urgently needing legal residency (Rivas, 2010). This is exactly opposite to the treatment of wealthier, educated, people who do not urgently need to come to the United States.

Now that this study has examined the effects of immigration, recent immigration reforms, and the legal struggles of legal immigration; the next point of emphasis is that of the DREAM Act. As described on the Immigration Policy Center website, in June of 2012, the Obama administration announced that it would accept requests for Deferred Action for Childhood Arrivals (DACA) (Immigration Policy Center, 2012). This initiative suspends the deportation of young people residing unlawfully in the United States that arrived to the United States as children, have graduated from United States' schools, and match the criteria established under legislative proposals like the DREAM Act (Immigration Policy Center, 2012). In the following section, this paper will analyze the DREAM Act specifics and also assess different supporters and critics of the bill.

The DREAM Act

The Immigration Policy Center article, "Who and Where the DREAMers Are", most effectively explained the DREAM Act and its provisions. In the article, statistics show that there are roughly 1.8 million immigrants in the United States who are eligible, or might become eligible for the Obama Administration's 'deferred action' initiative for unauthorized youth brought to this country as children (Immigration Policy Center, 2012). The parameters are: under the age of 31; entered the United States before age 16; have lived continuously in the country for at least five years; have not been convicted of a felony, a significant misdemeanor, or three other misdemeanors; and are currently in school, graduated from high school, earned a GED, or served in the military (Immigration Policy Center, 2012). There are three distinct groups within this population of potential beneficiaries. The first group includes those who are between the ages of 15 and 30 who are either in high school or already have a high school diploma and are immediately eligible for deferred action (Immigration Policy Center, 2012). The second group includes those between the ages of 5 and 14 who will be eligible at some point in the future if the deferred action initiative remains in place (Immigration Policy Center, 2012). The third group includes those between the ages of 15 and 30 who are not in high school and do not have a high school diplomas. members of this group might be eligible for deferred action if they get a GED) (Immigration Policy Center, 2012).

The Immigration Policy Center article describes people who are eligible for deferred action as "DREAMers." The DREAM Act stands for Development, Relief, and Education for Alien Minors. The Immigration Policy Center article analyzed DREAMers and found that a large portion of them are Mexican and reside in mountainous immigrant-receiving states with large unauthorized populations (such as California and Texas) (Immigration Policy Center, 2012). The Immigration Policy Center article also compiled a number of statistics to decipher who the true beneficiaries of the DREAM Act will be in the United States. Their study found that roughly 936,933 immigrants between the ages of 15 and 30 might immediately meet the requirements of the deferred action initiative, which comprises nearly 53% of all potential beneficiaries (Immigration Policy Center, 2012). This study also found that approximately 436,329 immigrants between the ages of 5 and 14 might meet the requirements of the deferred action initiative at some point in the future if the initiative remains in place, and this group comprises roughly 24 % of all potential beneficiaries (Immigration Policy Center, 2012). Nearly 401,280 immigrants between the ages of 15 and 30 might meet the requirements of the deferred action initiative at some point in the future if they earn a GED, and this group comprises 23% of all potential beneficiaries (Immigration Policy Center, 2012).

The article then compiled the largest state winners when it comes to beneficiaries. The states with

the most potential beneficiaries are California (539,774), Texas (298,133), Florida (106,481), New York (88,889), and Illinois (83,088) (Immigration Policy Center, 2012). The next demographic examined was the potential beneficiaries by gender. The study showed that females account for only 39 percent (155,650) of those potential beneficiaries who need a GED in order to qualify for deferred action and 46% (808,123) of all potential beneficiaries in the United States (Immigration Policy Center, 2012). The next statistic discussed was more predictable than the previously discussed statistics. Around 71 %, more than seven-tenths of potential beneficiaries are Mexican while 14 % are from other countries in North and Central America (including the Caribbean) (Immigration Policy Center, 2012). Approximately 6% of potential beneficiaries are from Asia, 6% from South America, 2% from Europe, and 1% from other parts of the world (Immigration Policy Center, 2012). The greatest numbers of potential beneficiaries from Mexico live in California (437,662), Texas (259,880), Illinois (71,619), Arizona (66,301), and Georgia (35,723) (Immigration Policy Center, 2012). The greatest numbers of potential beneficiaries from other countries in North and Central America (including the Caribbean) live in California (51,454), Florida (38,240), New York (29,654), Texas (24,203), and New Jersey (12,142) (Immigration Policy Center, 2012). The greatest numbers of potential beneficiaries from Asian countries live in California (37,033); New York (11,275), New Jersey (6,245), Texas (6,184), and Illinois (3,958) (Immigration Policy Center, 2012). In the largest immigrant populating states, Mexicans remain the dominant country/region. In California, the largest numbers of potential beneficiaries are from Mexico (437,662), followed by other countries in North and Central America (including the Caribbean) (51,454), and Asia (37,033) (Immigration Policy Center, 2012). Texas's numbers are relatively similar to California's numbers. In Florida, however, the largest numbers of potential beneficiaries are from North and Central American countries other than Mexico (including the Caribbean) (38,240), followed by Mexico (31,879), and South America (30,527) (Immigration Policy Center, 2012). The largest groups of potential beneficiaries in Virginia are from North and Central American countries other than Mexico (including the Caribbean) (9,910), followed by Mexico (5,821), South America (3,940), and Asia (3,846) (Immigration Policy Center, 2012).

Writer Catherine Poe effectively examined the DREAM Act in her article "DREAM Act: Basics of what Undocumented Youth must do to prevent deportation." As mentioned above, on June 15, 2012, President Barack Obama gave amnesty to all undocumented children of illegal immigrants that fall under certain qualifications and criteria. Poe writes that the government will be using its discretion not to pursue those who arrived in this country before turning 16, have no felony record, have resided here continuously for at least five years, are currently in school, have graduated from high school or obtained an equivalency diploma, or are honorably discharged veterans (Poe, 2012). The only main age stipulation is that they cannot have turned 30 at the time of their application. People who meet the requirements of the act can receive numerous two-year deferments from any prosecution for living in this country illegally. In addition to the deferment being infinitely renewable, they also will be able to work legally in the United States. Poe continues her article with a quote concerning President Obama from the Pew Research Center. She said that his order could affect up to 1.4 million children and young adults including young people who are 18 to 30 years old, having arrived in the United States as kids and are in high school or have graduated (Poe, 2012). Poe also writes that there are currently another 700,000 children younger than 18 still in school with 150,000 of them in high school (Poe, 2012). Although this bill did cause tremendous amounts of criticism, Obama reassured everyone that it would not be permanent. Poe quotes Obama in her article saying, "This is not a permanent fix. This is a temporary stop-gap measure that lets us focus our resources wisely while giving a degree of relief and hope to talented, driven, patriotic young people. It is the right thing to do" (Poe, 2012). Even after this assertion by Obama, many people still opposed the plan.

Many people have either strongly supported or strongly criticized the DREAM Act ever since implementation. Opponents of the DREAM Act fear that awarding immigrants amnesty who have previously broken the law is only an invitation to other immigrants to break the law and come to the United States illegally, knowing that their children could become legal residents. The law seemingly offers an incentive to break immigration laws. Opponents of the bill also believe that, on the case of applying for college and receiving aid for a higher education, it creates a level playing field for United States citizens and illegal immigrants, which is unjust. Illegal immigrants, as a result of the DREAM Act, will have equal opportunity to acquire limited state and federal resources as legal residents. This is offensive to some considering the state

that the economy is in currently. Right wing opponents of the DREAM Act also believe that the bill encourages more illegal immigration to the United States. However, opponents on the political left see the bill as a military recruitment tool. Opponents of the DREAM Act also speculate that creation of the law benefits the United States army more than the undocumented children.

Supporters of the DREAM Act, however, wonder what would be another alternative to deal with the younger immigrants. With little to no connection to their home countries, many immigrants grew up in the U.S. society. They only know the United States as their home. Advocates also feel that these young immigrants have just as much to offer future America as legal residents and citizens do. In addition to this thinking, supporters assert that people who will benefit from the DREAM Act were not active participants in breaking the law. Many supporters understand that the passing of the DREAM Act eliminates a federal provision that penalizes states that give in-state tuition without regard to immigration status. Many believe that the contributions immigrants would make in the future would easily trump the educational investment needed to educate the immigrant students.

As an alternative to the DREAM Act, opponents have come up with the program STAPLE. STAPLE stands for Stop Trained in America PhD's From Leaving the Economy. This entails foreign nationals who received a PhD in America to stay in the country and be exempt from work visa or green card quotas. Opponents argue this, would stimulate the economy through foreign resources and ideas, but only to those who have proven exceptional worth.

John Hudson's article, "The Conservative Case Against the DREAM Act," compiles numerous conservative arguments in blog circles about the DREAM Act and provides a different, educated perspective and concerns about this bill. Hudson's article quotes Steven Camarota. He says, "On average, each illegal immigrant who attends a public institution will receive a tuition subsidy from taxpayers of nearly \$6,000 for each year he or she attends, for a total cost of \$6.2 billion a year, not including other forms of financial assistance they may also receive (Hudson, 2012). Hudson then quotes Mark Krikorian saying, "Perhaps one-fourth of those legalized under the 1986 Immigration Reform and Control Act received amnesty fraudulently, including Mahmud Abouhalima, a leader of the first World Trade Center attack. The fraud in that first amnesty program was so pervasive as to be almost comical, with people claiming work histories here that included picking 'watermelons from trees and dug cherries out of the ground' (Hudson, 2012). Mark Krikorian also said, "This is like playing a slot machine without having to put any money in; any illegal alien can apply and if he wins, great, but if he loses, he cannot be prosecuted even if he lied through his teeth about everything. No amnesty proposal can be taken seriously unless applicants understand, right up front that any lies will result in arrest and imprisonment" (Hudson, 2012).

Out of all the compiled comments in Hudson's article, the comments from The Heritage Foundation and David Frum seemed to make the most valid points. The Heritage Foundation argued, "Among several other concerns, the DREAM Act rewards those who violated immigration laws by granting them in-state tuition while state laws deny legal aliens on student visas tuition benefits. The act's lax standards would make it tough to police fraudulent applicants while the government would be prohibited from using information submitted to deport anyone who files a DREAM Act application and does not qualify" (Hudson, 2012). One of the final, most outstanding references in Hudson's article was that of David Frum when he said, "DREAM sends a message to every teenager on planet Earth: Come to America. If you enter the U.S. before age 16 and if you can remain here for five years, or buy papers that can falsely show you have lived here for five years, you are as good as a citizen already. It holds no deportation proceedings. No risk that your application could harm you. There are only lenient and subsidized requirements for permanent residency" (Hudson, 2012).

Although the DREAM Act targets immigrants that can help the United States in the future, there are still many causes of concern, none bigger than the message that the United States would be sending to people contemplating about illegally entering the country. The DREAM clearly takes advantage of the benefits that immigrants bring, but this comes at the risks of not having a particularly strict immigration law. The solution to the immigration issue that has plagued the United States can be found in several reforms made to the DREAM Act. Immigration policy makers should treat the DREAM Act as what it is: a temporary stopgap to find the correct solution to the problem. James Jay Carafono of the Heritage Foundation

speaks on several reformed ideas in his article, "Starting All over on Immigration Reform." In the article Carafano affirms that despite the often tendentious debate over immigration reform, the underlying truth is that an overwhelming majority of Americans—on both sides of the debate—believe that America is and should remain a nation of immigrants (Carafano, 2012). Immigrants from all over have continued to contribute to the success and diversity of the United States and it is imperative that we retain our identity as a melting pot nation. Carafano also asserts that Americans on both the Left and Right political sides want the West Wing to support solutions that ensure that immigrants and non-immigrants coming to America do so legally; playing by the same rules as the rest of the nation—and enjoying both the benefits and obligations of living in a free society (Carafano, 2012). The next section will give details and definite guidelines to making successful immigration reforms.

LON Act (Legal or Nothing)

The proposed immigration bill of this study, LON Act implies what the name of the act entails: Legal or Nothing. This act will assert a zero tolerance policy when it comes to illegal immigration. Although this may seem similar to other border strengthening policies, the LON Act provides a realistic alternative to proposed laws of the past. The focus of the LON Act will not be to catch illegal immigrants. The main focus of the LON Act will be to form a nation in which legal immigration is much easier, efficient, and nearly essential. Tim Kane's article, "The Real Problem with Immigration and the Real Solution," mentioned above will provide a few guidelines that contribute to the discussion in the following paragraphs.

Several guidelines that should be applied to LON are guest worker identification, incentives to register and renew with the guest worker program, incentives for United States companies, efficient legal entry, brief waiting periods, no amnesties or "opened floodgates," and harsh punishment for law breakers (Kane, 2006). Guest worker identification refers to a large technologically based system in which visitors, guest workers, or any other incoming immigrant must be registered. There is at present no effective system of internal enforcement, but the Department of Homeland Security has in place a "basic pilot employment verification program" that demonstrates the potential effectiveness of using such technology with guest workers to discourage undocumented work arrangements (Kane, 2006). In order for this concept to be effective, employers must verify the registration status of all immigrant workers electronically.

Existing migrant workers should have incentives to register and renew their work documents with the guest worker program (Kane, 2006). This allows immigrant workers to renew their work documents instead of staying over on expired work documents. For example, a program that caps the tenure of guest workers at 6 years can be expected to experience massive noncompliance at the 6 year point because a hard cap on tenure is an incentive to disobey the law while renewable short term work permits have a greater likelihood of success than a single permit with an inflexible expiration date (Kane, 2006). Another hugely valuable guideline to be followed is that United States companies need incentives to put the plan into action. The immigration reform will only be as effective as the commitment of the parties involved. Kane suggests that perhaps the most significant incentive is a negative one: the new law should include funding for a system of internal enforcement to police and prosecute companies that break the law (Kane, 2006). With strict punishments, companies will be much more likely to comply and obey the immigration laws.

Efficient legal entry may be the most vital stipulation in the LON Act. Although Kane's proposed ideal of forcing all illegal immigrants to leave and return is unrealistic, His main assertion that entry into the country must improve tremendously will be an immensely large part of the success of the LON Act. He explains it best as he says that if immigration programs maintain their prolonged waits for reentry or a lottery for work visas, existing migrant workers will have little incentive to comply with the law, and will continue to hop the border. The LON Act incorporates the most efficient entry process. The LON Act also allows illegal immigrants in the country a set time to renew their working documents or become legalized immigrants.

The efficient entry program leads to the next guideline: brief waiting periods. Kane's suggestion of a waiting period of merely a couple of days or weeks is optimal for the LON Act. Kane writes a waiting period of at least a few days will give law enforcement agencies time to screen incoming visitors' biometrics against criminal and terrorist databases (Kane, 2006). Shorter waiting periods are a necessity and a highly realistic aspect of the proposed LON Act. This will prevent illegal immigration and encourage the legal immigration

of many productive people.

Ineffective provisions such as amnesties or opened floodgates will not be a part of the proposed LON Act. This Act should intend to provide reasonable entry into the country to eliminate the temptation to break the law in fear of a strict re-entry process. Kane writes that such a system will encourage many migrants to exit, knowing that they will be able to return under reasonable regulations (Kane, 2006). Amnesties and floodgates grant approval to break the law. The time and effort of this immigration program must be putting everyone through the system, and having them play by the same rules.

The next guideline, harsh punishment for lawbreakers is also a highly valuable guideline that will shape the discipline and the responsibility of all parties involved. Kane describes several effective punishment strategies in his article. He writes that migrants who decline to register and are apprehended inside the U.S. should be punished with more than deportation (Kane, 2006). The law should introduce steep penalties such as a 10-year ban on guest worker participation for migrants and lifetime prohibition on violators' applying for and receiving U.S. citizenship (Kane, 2006). With a legal entry system that is relatively easy to gain legal entrance into the country, there is no excuse or justification for not working within the system. The law would of course establish a certain time in which punishments are to be administered, but after that time, lawbreakers should have heavy penalties in order for the majority of immigrants to comply with the law. These penalties also include employers who fail to uphold the provisions of the LON Act. If employers and immigrants alike comply with the rules and regulations of the LON Act, illegal immigration will be a thing of the past.

Two provisions that Kane's article did not mention, but will prove to be imperative in the LON Act, are educator assistance and joint family immigration. Educator assistance refers to prospective, immigrant students who wish to come to the United States for educational purposes. If they meet certain educational criteria for a credited school, this can allow schools in the United States to obtain the best students from around the world. This program can also allow immigrant students to acquire several scholarships offered directly from the school. This would put immigrants on the same playing level as citizens. Joint family immigration is also a prominent provision of the LON Act. This allows families to move into the United States with the man or woman that is migrating for school or work. This is convenient for families and allows for more immigration to improve the economy. This also allows for a more comprehensive immigration registration system as all of the family members would be registered and kept track of in the database.

Conclusion

This paper has examined a number of different aspects of immigration policy and has come to a number of different conclusions. The common claims of illegal immigration putting a strain on the economy are false. The real problem that concerns immigration policy makers is security as well as the economy. In fact, immigration leads to a number of benefits. Recently implemented, strict immigration laws are not the answer to economic problems as seen through the failures and issues of states such as Arizona have chosen to implement them. On the contrary, these strict immigration laws led to a downward spiral in state economies. One of the main reasons why there is such vast illegal immigration is that the immigration system currently in place is extremely inefficient and unorganized. Legal entry into the United States takes some immigrants multiple years to complete, which acts as punishment for those who play by the rules. The DREAM Act was a valid solution to the issues concerning illegal immigrants that are in the United States. Many people do not understand that it is a temporary and not permanent fix to the immigration issue. Although many people support or criticize the DREAM Act, most of all people want to see a fair playing field in which everyone is playing by the rules and live up to their responsibilities. Finally, the LON Act provides the solution to solve all immigration problems. With its efficient entry system and strict penalties and punishments for those who fail to abide by its provisions, the LON Act will lead to a sophisticated immigration system in which illegal immigration would be unnecessary. The LON Act will lead to not only reduced immigration involved issues, but the added immigrants would boost the economy to new levels that would help the country as a whole.

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The Myth of Laissez Faire and the Contrivance of Capitalism

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ABSTRACT

There is a common assumption ubiquitous in the economic discourse that markets are a naturally occurring phenomena within any given society. On a *prima facie* level, this assumption seems to possess a great deal of explanatory power since important thinkers such as Adam Smith and John Locke argued that markets comprise the most natural form of human economic interaction because exchange and barter is a undeniable part of human nature. Moreover, they argued that a market society enables man to freely exchange and barter on a mass scale – thus providing man with the tools necessary to lead the most happy, comfortable, and productive life thought humanly possible. However, is this the case? Evidence seems to suggest that capitalism and classical liberalism are the result of a “great transformation” from the agrarian, communally-based world of feudalism to the industrial individualism of capitalism and classical liberalism. Essentially, the enclosure of common land in early modern England at the insistence of lords and noblemen saw the rise of a new capitalist class, as well as a new conception of property as being the result of “labor-mixing” rather than title. However, what is seldom reported is that in reaction to the emergence of capitalism, the welfare state materialized in order to reign in the pitfalls of unchecked individual self-interest and to preserve the market system itself so that a “thick conception” of property could be maintained. The concept of a welfare state as a means to preserve the enabling social conditions for capitalism is so essential to a capitalist economy that the majority of classical liberal philosophers included a redistributive framework in their economic theories – including Smith and Locke.

According to a review of history, economics, and political science scholarship, markets are a contrivance and that laissez faire capitalism does not exist. In arguing this, we will use Polanyi’s “great transformation” thesis as well as the Schumpeterian “vision” in order to evaluate the shift in economic theorizing from pre-modernity and “maintenance” economics to modern capitalism and its emphasis on “growth economics.” I would also like to stress the oft-understated connection between religion and economics, considering the fact that religious considerations often constitute a central component in forming an “economic vision” for society.

Introduction

There is a common assumption ubiquitous in the economic discourse that free markets are a naturally occurring phenomena within any given society. On a *prima facie* level, this assumption seems to possess a great deal of explanatory power – markets now exist on a global scale and trade makes up 21% of world income. Further, thinkers such as Adam Smith and John Locke claimed that markets comprise the most natural form of human economic interaction because exchange and barter are an undeniable part of human nature. Moreover, a market society enables man to freely exchange and barter on a mass scale – thus providing man with the tools necessary to lead the most happy, comfortable, and productive life thought humanly possible. However, is this the case? Evidence from the political economy literature seems to suggest that capitalism and classical liberalism are the result of a “great transformation” from the agrarian, communally-based world of feudalism to the industrial-centered, individualistic world of capitalism and classical liberalism. Essentially, the enclosure of common land in early modern England at the insistence of lords and noblemen saw the rise of a new capitalist class, as well as a new conception of property as being the result of “labor-mixing” rather than title.

However, what is seldom reported is that in reaction to the emergence of capitalism, the welfare state materialized in order to reign in the pitfalls of unchecked individual self-interest and to preserve the market system itself. The idea was that society would not be able to exist if all pursued their own self-interest. Thus, the concept of a welfare state as a means to preserve the enabling social conditions for capitalism was thought so essential to a capitalist economy that the majority of classical liberal philosophers included a redistributive framework in their economic theories – including Smith and Locke.

Despite the development of a market system, the idea that economic growth (a significant increase in production activity or consumption) was not viewed as the yardstick for evaluating the health of an economy until World War II. Instead, preserving the natural order of society within the context of a market economy was seen as the proper role of the welfare state. This is partially evidenced by the fact that only 1/3 of federal budgets in America were unbalanced before the 1930s as a balanced budget was linked with the belief in limited federal government and states' rights. The rise of progressivism and a continued focus upon substantive equality and social justice incurred the federal government to take a more proactive role in economics. Consequently, institutional tools such as the income tax and central banking were emboldened in 1913 so that material equality and economic growth could be maintained. This, combined with the rise of Keynesian economics' focus on boosting consumer spending as a valid means of stimulating economic growth saw the creation of a new paradigm: economics would take the form of an "economics of abundance."

Such shifts in economic thought reveal an even deeper truth regarding political economy – that economic activity and policy is the result of a number of cultural, religious, and other institutional factors rather than being solely the result of the material structure of the world. In other words, what seems possible or impossible when thinking about economics is the result of whatever "vision," a pre-analytic cognitive act that supplies raw material for economic theorizing, takes hold of a culture at any given time. Moreover, this vision can serve powerful interests within society and the economy – its organizing institutions can also serve the purpose of advancing political agendas as is the case with the modern market economy.

Therefore, this paper argues that markets are a contrivance and that *lassiez faire* capitalism does not exist. Contrivance here means the market system was deliberately brought about at the behest of economic elites and was sustained through subsequent shifts in religious thought, political economy and economic governing styles, not that it "organically" developed. It is important not to view the contrivance of the market as "trick" designed to "fool" the world. Rather, the contrivance represents a conscious attempt by elites and social reformers to alter economic institutions in such a way that serves their economic interests.

Hence, we can see the progression from a feudal society to a market society in three shifts or "waves:" The first shift we will look at is the shift from Scholasticism, the idea that God is suprarational and that His thoughts and nature are good and could be accessible by humans, to Nominalism, the idea that God is radically unknowable and His will is arbitrary in the late Middle Ages. This shift is antecedent to the creation of markets as Nominalism posited a nature in which the universe is contingent upon God's will which is vastly different from the notion that the classes of society were arranged by God and were fixed parts of nature. Second, the advent of classical liberal political economy in the Scottish Enlightenment managed to provide a philosophical justification for the market and a blueprint for how it is to develop. Third, the 20th century saw the advent of "growth" economics wherein the health of an economic is to be measured by increases in wealth over time rather than stability. In arguing this, we will use Polanyi's "great transformation" thesis as well as the Schumpeterian "vision" in order to evaluate the shifts in economic theorizing from pre-modernity and "maintenance" economics to modern capitalism and its emphasis on growth economics.

The Worlds of Scholasticism and Nominalism

Before the rise of the market society, individuals did not think of themselves as consumers concerned with maximizing utility by seeking wealth. As Robert Heilbroner (1999) argues, economic activity was directed by either the "pull of tradition" or "the whip of authoritarian rule." In the former, ideas such as the "natural order" and "common law" directed economic affairs. In the latter, the wishes of emperors, kings, and guild-masters directed economic affairs. Individuals thought of themselves as "stewards of the earth" who did not work for a living but worked to maintain land, which was considered to be the foundation for the organization of society. Labor, similarly, was a hodgepodge of journeymen, serfs, and tillers. In other words, the "vision" permeating pre-modern Europe was one in which classes, title, and prestige were considered to be a necessary, unchanging part of nature itself. The impetus of economic activity was to maintain what already existed, not to attempt to increase the yield of material goods through the market.

Moreover, a number of cultural and material factors prevented a market society from emerging. For instance, a system of property had not yet developed. The idea of economics being distinct from social context had not yet developed as religion dominated economic life and a unified means of recording transactions

had not yet taken hold – each community had its own money, rules, and regulations when it came to business. The most vital institution which forestalled the creation of a market system was the Catholic Church. The Church banned interest rates; instituted price controls to ensure fairness in prices; supported conceptions of poor relief which favored direct and voluntary forms of welfare; and proclaimed that those who practiced poverty were favored children of God who are worthy of admiration and imitation. Work was viewed as something for sustenance only – escaping Purgatory and attaining salvation, not maximizing utility, was the central concern of life according to the Church. Accordingly, poor relief was focused on feeding the poor rather than attempting to give them productive work to do. A great example of this lies in the practice of indulgences. Through the practice of indulgences, a rich person would donate to the church on behalf of an impoverished person. The impoverished would pray on behalf of his benefactor which would, in turn, assure his benefactor less time in purgatory. Thus, the Church's role was to mediate between the poor and rich. The idea that profit-seeking was sinful permeated even the upper classes of society. The wealthy Fugger family owned banks, as well as vast deposits of gold and silvers, which they used to coin money. When the family's patriarch, Anton Fugger, died, none of his heirs thought that continuing the family's business was "worth the bother." What is to be gleaned here is that life in Scholastic Europe was one that saw Earthly existence as a temporary endeavor – salvation of the human soul was viewed as a much worthier goal than attaining comfort in this world. However, a shift in theology would sow the seeds which would bring about modernity and the market system with it.

Scholastic Catholicism rested upon a theological foundation of ontological realism. Creation was conceived as a reflection of God's reason and the natural order was thought of as necessary and fixed. Order was to be found in natural law. In other words, the structure of society was thought to represent the nature and essence of God. However, the Crusades pitted Christian Europe against the Islamic Middle East who also practiced an Aristotelian ontology. As such, the Archbishop of Paris condemned Aristotelianism and a new ontology was conceived. Nominalism posited a conception of nature which denies universals and conceives of God as radically omnipotent, beyond human ken, and only understandable through divine revelation. Thus, nature was not conceived of possessing an intrinsic, purposeful order – it was thought perceived as an arbitrary creation of God's will whose nature is not accessible to man.

Since nature was no longer considered fixed, two events would occur which would finally bring about the creation of markets and the modern welfare state: the enclosure of common land and the Protestant Reformation. The enclosure of common lands came about due to the interests of a new proto-capitalist class of land owners. As stated earlier, land and labor were not treated as commodities but as a constant in the natural order of human existence. However, the industrial revolution saw the rise of new technologies which allowed for an "almost miraculous" improvement in the tools of production. Additionally, new scientific technologies such as the telescope allowed man to perceive the world as a massive and culturally diverse "cosmos" rather than a localized community wherein the Church and the family were considered the most important facet. Thus, through Nominalism and new technology, the world itself and man's place in it altered drastically. This allowed for man to ponder the possibility of economic improvement rather than mere maintenance or habitation. As such, in 1607 common lands were enclosed and sold for profit. This event triggered wars between lords and noblemen representing economic interests and kings, bishops, and peasants representing the "welfare of the community." Moreover, the explosion of industry brought about the mass displacement of workers into industrial towns centered primarily in the north of England. Cities like Manchester, Leeds, and Newcastle would serve as productive/industrial hubs. As such, man's labor power and land were no longer seen as a part of a fixed feudal order, but as a commodity whose worth would be determined by the market in prices and rents. In other words, the market was brought about in a piecemeal fashion from around 1517 – 1607, from the beginning of the Protestant Reformation until the actual enclosures of common lands in England.

The Great Transformation

Despite the new levels of economic growth brought about by the commodification of labor and land, a large level of inequality would emerge as a result. Poverty was widespread across the industrial centers. As such, two serious questions emerged about the nature of a market society. 1.) How could a society in which every member is encouraged to seek their individual self-interest sustain itself? And 2.) How could a

system which incurred such great material progress also attain such a high level of poverty? In order to address these concerns, the welfare state arose. Nonetheless, welfare states themselves are also determined by economic "visions." As such, the nature of poor relief varied throughout Europe depending upon how Catholic or Protestant a nation was. For instance, because Catholicism encourages adherents to practice poverty, poor relief in Catholic nations was much more direct, local, and voluntary. The notion was to "feed the poor" rather than make the poor "work for a living." However, Lutheranism taught the opposite – that work was pleasing to God and was a good in itself. Thus, work was seen as a way to overcome poverty and to achieve both egalitarian social ends and economic prosperity. Consequently, poor laws were passed and workhouses were built, thus securing the state's positive role in providing for the upward social mobility of citizens. The difference between the two conceptions of poor relief is apparent in the amount of welfare distributed. By 1892, 6.7% of workers in Lutheran Berlin received some type of assistance compared to the 3.8% in Catholic Cologne.

What is to be gleaned here is that the "double transformation" – the creation of markets and the subsequent creation of welfare states – created the modern world. The vision of society had moved from one governed by a rational God who arranged society's classes and economic activity as something fixed according to a vision in which God possesses an arbitrary will and arranges society's classes in accordance to His will alone. Most vitally here, is the idea that nature is now seen as something chaotic and that human beings, through individual will, can become the masters of nature. Because humans cannot manage their own salvation, the central focus of human economic life would be to attain comfort and prosperity. Subsequently, the political doctrine of classical liberalism would concern itself with attempting to realize the ideal of attaining human material progress. The blueprint for nearly all subsequent economic theorizing would be found in the writings of Adam Smith. However, the seeds of a socially conscious form of liberalism, or progressivism, would also be sown in Smith's writings through his *Laws of Population and Accumulation* (which posited that prices on goods and labor would be stabilized through the increase in population and need to gain material goods over time.)

Smith's writings are important insofar as they provide a blueprint for a market society. According to Smith, individuals working in a market system do not produce for any type of communitative goal, but out of self-interest. What regulates man's selfishness is competition. For instance, if a business-owner refuses to pay workers or if he sets wages too high, no economic activity occurs. Therefore, it is societal demand and self-interest which work together in order to stimulate economic growth. Thus, for Smith there is little need for an active state to intervene to ensure economic activity – the market regulates itself and is bound together by certain economic laws which result in man's freedom from arbitrary political or Church authority. In short, "one can do as one pleases in the market. But if one pleases to do what the market disapproves, the price of individual freedom is economic ruination."

Thus, we are confronted with an entirely different conception of how society functions. Instead of working through tradition or authority, economics would be seen as the result of individual human action in relation to market demands. If man is left to his own devices, economic activity will work in such a way that it will provide based on what society values at any given time in accordance with the "invisible hand of the market." Problems within a market economy would be fixed via neutral arbitration or by the self-regulating nature of competition. The state's role is to be minimal.

On a *prima facie* level, classical liberalism seems to eschew completely the communitative justice set forth by medieval scholasticism. However, two concepts within Smith (and Locke to a lesser extent) suggest that there is still a desire to satisfy social concerns from within classical liberalism. The first is the fact that Locke and Smith both argue that a welfare state is needed in order to correct some of the inequalities that would emerge from the market economy. The second are the aforementioned Smithian laws of population and acquisition.

In regards to the welfare state, Locke understands that if property is the result of labor-mixing, then some people would be able to acquire more by virtue of the inequality in people's talents and abilities. However, the liberal state should attempt to overcome this pratfall of nature by establishing rule of law and providing a means of economic redistribution in order to maintain a state of "natural liberty." As such, man

would be equal insofar as he was given equal protection under the law and was guaranteed a minimal amount of redistributed wealth. Thus, formal equality: the idea that coercion is justified only to secure obedience to universal rules of just conduct, would be a major concern for classical liberalism.

In the realm of economics, Smith argued that the market society ought to be valued because through the natural progression of society, equality would come about. In order to argue this, Smith introduced the laws of population and accumulation. The law of accumulation states that as profits increase, individuals will save more in order to protect capital. However, if man saves too much, more men and wages would be needed to compensate for the excess in wealth. Thus, individuals will begin to multiply in order to satiate the need for labor. This is the law of population. Smith envisioned that the process would create an endless chain of accumulating and producing until a "return to the natural level of wages" resulted, thus ensuring perfect equality.

What this demonstrates is that even the founders of classical liberalism understood that the market does not always easily defend non-material values. Thus, some type of welfare model is needed to reign in some of the excessive elements produced by a market system. Moreover, a sense of formal equality is needed so that one class may not emerge and exploit lower orders of society. In other words, the market itself could not satisfy the desire for freedom and equality at the same time. Thus, classical liberalism is distinct from feudalism in that it views institutions and labor as a result of society's will rather than a natural order of human existence. On the other hand, classical liberalism still has one foot planted firmly in tradition insofar as it understands that the market, if left alone, can result in severe social repercussions and that private property should be understood as a means towards social betterment and a general sense of equality.

The Ascent of Growth

It is important to note here that economies are not quite measured in growth yet. What would begin the slow transition to growth economics is the transformation from classical liberalism to high liberalism or progressivism and the idea of "material equality". Throughout early American economic history, classical liberalism combined with a secularized Calvinist notion work ethic comprised the economic vision of America. However, this vision would begin to shift during the late 1800s as radical labor and other social movements began to demand a more substantive form of equality in reaction to the poor social and living conditions of the time. Essentially, Smith's promise of the market leading to material equality had failed. Hence, equality was beginning to be seen as a function of relative wealth rather than a matter of legal status. As such, technocracy and progressivism, associated with reformers such as Upton Sinclair, Woodrow Wilson, and T.H. Green, came into vogue and demanded the state take a more proactive role in ensuring the economic salience of citizens.

However, despite the state taking a more proactive role, the federal budget did not run a deficit until the 1930s. In fact, many of the economic policies enacted at this time were designed to increase state revenue (the 16th Amendment, the Federal Reserve Act of 1913) or curbed economic growth in favor of social welfare. The impetus was on using what was available for maximum social benefit rather than incurring a deficit. What would bring America into the world of deficit spending and growth economics would be the Great Depression and the advent of Keynesian economics.

The Great Depression would result in two different New Deal policies. Interestingly enough, the two New Deals represent both forms of economic theorizing: maintenance economics and growth economics. When the first New Deal was proposed in 1933, economics were still conceived as a matter of maintenance (although a transformation towards growth economics was already underway.) As such, many economists and economic advisors figured that the Great Depression was a sign that the American economy had reached its apex: that growth was no longer possible. Thus, the first New Deal was implemented with a growth-limiting idea in mind. Agencies such as the National Recovery Administration and the Agricultural Adjustment Act were formed, price-fixing, production ceilings, and quotas were instilled in order to attain the goals of "recovery, balance, and security." Moreover, programs such as the Tennessee Valley Authority represented the idea that long-term goals such as creating new infrastructure were more important than increasing consumer spending. In other words, the first New Deal focused more on security than growth and maintained the importance of the accepted economic vision of maintaining balanced budgets and saving

for the future.

However, through the breakout of World War II and the efforts of politicians such as Robert LaFollete and economists such as John Maynard Keynes presented an alternative: if the federal government increased spending, GDP would rise and more productive activities could be encouraged and everyone's standards of living would rise. Accordingly, federal spending drastically rose and was targeted mainly towards industrial production. The federal government eased anti-trust and labor law enforcement and managed to expand the Army and Navy. In fact 85% of all munitions against Japan came from the United States. By 1945, the Army had 8.1 million troops and the Navy had 4 million troops as well. As such, America had entered a new form of economic thinking. The impetus is now on using the state's power instrumentally in some areas and limiting the state's role in others in order to create economic growth in order to meet social ends. For instance, in the 1960s the Great Society attempted to use the federal budget and deficit spending in order to combat poverty. The Reagan Administration would deregulate the financial industry and increase military spending in order to simultaneously promote safety in light of the Cold War and create jobs. The common denominator between these two seemingly contradictory plans is that they both accepted the idea that fiscal spending could create growth and that deficits could be used to foster economic growth.

What are the fruits of the "growth" model? And how does the advent of growth economics affect economic conditions of contemporary society? While growth economics have resulted in greater material wealth, they have also created conditions in which the consequences of market failures are higher. For instance, the advent of globalization has created a more interconnected world economically. This, subsequently, creates more externalities or situations wherein a market exchange imposes costs or benefits on others not party to a given exchange. So, when Spain, the UK, Iceland and America used fiscal and monetary policy to create a housing bubble, the risks became exponentially higher. As such, when derivative-backed mortgages began to fail and consumers began defaulting on their debt, a global economic crisis occurred which prompted the UK to utilize anti-terrorism laws to intervene into Iceland's economy and the US Government to bail out its banks.

Moreover, focus on short-term growth rather than long-term investment can lead to a broken incentive structure with a correspondingly bad regulatory structure wherein bankers are given incentives to be dishonest and sell inferior products in the name of short-term term profit with a guarantee of a bailout due to a "too big to fail" status. As such, unnecessary risk-taking is encouraged and the financial sector (which makes up 40% of profits in the US economy) favors untested, experimental products which are likely to yield a short-term profit, but are unlikely to remain stable in the long run. When products such as these fail and the banks themselves begin to fail, the repercussions are felt in other countries. Therefore, while growth economics undoubtedly do see a rise in standards of living and material goods, this level of growth is not guaranteed to exist forever. At some point an economy must stabilize; and if institutions whose main purpose is to ensure stability or protect and promulgate the interests and well-being of society fails, then the entire system may correspondingly fail.

Conclusions

So, in response to the question at hand: are markets a naturally occurring phenomenon? No, because there is not a "clean" separation of economics from other aspects of human life – religious institutions, philosophies, attitudes, and governmental institutions all play a vital role in determining the nature of economic life within society. As such, the notion of an economic vision is an indispensable tool in understanding an economy as it reveals how all of life is interwoven and ultimately determines what a society views as economically possible and impossible. Moreover, by analyzing the history of economic ideology, a rather interesting narrative unravels itself. Feudal Europe thought of itself as an attempt to attune itself to a higher form of existence. The classical liberals thought of economics as a factor of economic laws and property rights as a means to a more complete and just social order. Progressives conceived of economics as a malleable entity which, through the intervention of the state, could be changed to address vital social values. Finally, the growth economist of today views the budget as a device which can be used to create a greater amount of material goods for consumption. The commonality here is that at no point was there a system of pure *laissez-faire*. The closest there ever was to an era of *laissez-faire* capitalist economics was 19th century Britain as the

logic of classical political economy (particularly the thought of Smith, Malthus, and Ricardo) dominated the political landscape, ensuring a stall in the development of more modern welfare policy. Yet, calamities such as the financial crash of 2008 and the Great Depression have shown us that ideas have consequences and that at some point, a fetishization of short-term profits can ultimately lead to disastrous results.

Ultimately, in order to avoid another crash such as the one seen in 2008, a new economic vision must emerge. However, the new paradigm must assert prudence as a major value and eschew wanton economic growth and consumerism in favor of social demands. However, it cannot stray too far from the growth paradigm of today. We cannot and should not want to "turn back the clock" to the feudalism of Medieval Europe. However, aspects of it should be celebrated: the focus on the community and natural growth is a desirable end. However, the classical liberal notion of free exchange is also a worthy end as it allows even those made less well-off by society a chance to express their preferences and participate in the production cycle. Thus, the emphasis on short-term growth and expansion should fall to the wayside. However, a market is now more-or-less a permanent fixture of society and the economic vision of tomorrow should allow other institutions to alter conditions so that its shortcomings can be mitigated and its fruits may be expanded to all members of society.

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Integrating Manipulatives to Improve Fraction Concepts

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ABSTRACT

Many students are overwhelmed by mathematics because the language is too difficult, the teaching strategies are insufficient or they have lost motivation. I explored the misconceptions that many students struggle with and provided possible methods of eliminating them at all levels for learning. We know little about which manipulative is most effective in increasing motivation or achievement with elementary math students. We have found that using manipulatives in mathematics instruction increases motivation in elementary students. To advance on these findings, I investigated the use of specific manipulatives to increase students' achievement during a unit on fractions. During this investigation, I studied the effect of manipulatives on students' understanding of fraction concepts and the students' conceptions of the unit of reference when working with fraction word problems. The students were administered a pre- and post-test to determine student conceptions and depict any changes in conceptions after the interventions. Interviews were given to a sample of the students to investigate the students' thought processes behind their answers on the pre- and post-assessments. The students were given 30 minute intervention lessons over a course of a week, with the final day of the week consisting of the administration of the post-assessment. I learned that students can increase achievement with the integration of various representations of manipulatives with fraction concepts. Specifically, students dramatically increased conceptions of the unit of reference by manipulating several tools, including number lines, fraction bars, pizza fraction party, estimation rope and others.

Overview of Purpose and Significance

Mathematics is complex and has many levels of difficulty for all ages of learning. Research has shown that five to eight percent of school children suffer from cognitive or memory issues that hinder their learning in "one or more mathematical domains" (Geary, 2004). Like many adults, students make common mistakes and "slips" that are natural to learning mathematics including misreading, making hasty decisions, and "cognitive overload" (Ryan & Williams, 2007). According to the Stanford Daily, the United States places thirty-first in math scores compared to other industrialized countries (Edwards, 2010). It is critical for teachers to know the common misconceptions of students in the area of mathematics in order to be an effective teacher.

Mathematical misunderstandings cause many students to fall behind or even give up on the subject all together. The concepts learned in mathematics, including problem solving, concepts related to objects, and utilizing specific thought processes are crucial throughout education and into adulthood (Duval, 2000, p. 3). Duval explains that many students "reach a breaking point in their understanding of mathematics," and a study conducted by Ryan and Williams suggests that many reach this point around age eleven (Duval, 2000, p. 3; Ryan & Williams, 2007). Many students are overwhelmed by mathematics because the language is too difficult, the teaching strategies are insufficient, or they have lost motivation. I explored the misconceptions that many students struggle with and provided possible methods of eliminating them for all levels of learning.

My focus for this research was on the effect of specific manipulatives on elementary students' understanding of fractions. Specifically, I aimed to investigate the impact of manipulatives on elementary student achievement. I hoped to find which specific manipulatives improve student conceptions about fractions concepts, such as the unit of reference.

Literature Review: Student Achievement, Motivation and the use of Manipulatives in Elementary Mathematics Classrooms

A vast amount of research has been conducted on the motivation and achievement of elementary students in the area of mathematics (See for example Chong-Ji & Hung, 2009; Williams, 2005; Ali, Akhter, Shahzad, Sultana, & Ramzan, 2011; Aunola & Nurmi, 2005). Many of these studies focus on the causes for the absence of motivation including socio-economic status, race, and gender. For example, the study conduct-

ed by Reyes & Stanic looked at the relationship of all three components and the influence on student education (1988). Low self-concept of ability has also been proven to be a cause for the lack of motivation in first and second year classrooms (Aunola & Nurmi, 2005). However, other scholars have directed their research toward finding a solution for increasing mathematical motivation in elementary classrooms. Among these solutions, we find studies on integrating technology into the instruction (such as interactive boards and content-based games), strategic grouping, and the use of manipulatives with problem-based learning (Chong-Ji & Hung, 2009; Williams, 2005; Ali, Akhter, Shahzad, Sultana, & Ramzan, 2011; Aunola & Nurmi, 2005).

Much of the research has shown that student performance and motivation increases with problem-based learning and the specific use of manipulatives (Ali, Akhter, Shahzad, Sultana, & Ramzan, 2011; Hougas, L, 2003). There are several types of manipulatives in the field of mathematic elementary instruction. Among these include two major categories: virtual (technological) and physical (hands-on) manipulatives (Batur, Cooper & Proctor, 2002). I reviewed research on the use of manipulatives in order to summarize what educators have learned about the impact of manipulatives on achievement in the elementary classroom. The methods of conducting these studies vary between researchers, but there are three main study designs that show meaningful results. These include pre- and post-testing, surveys and feedback, and observational data. In the next section, I review the research in each of these categories and summarize the results.

Pre-Test/Post-Test

Middleton & Spanias (1999), who constructed a review of research, claim that there is a direct correlation between motivation and achievement in elementary mathematics. This connection between performance on tests and motivation occurs with students and teachers. When attempting to learn about student motivation, some researchers have collected data based on formal testing. Among these include researcher constructed pre- and post- tests and end of year national assessments, as in research conducted by Ali, Akhter, Shahzad, Sultana, & Ramzan in 2011 and Cain-Caston in 1996.

Ali, Akhter, Shahzad, Sultana, & Ramzan (2011) found that implementing manipulatives within mathematics instruction increases student motivation and achievement. The scores of post-tests show significant improvement for elementary students using manipulatives with learners at multiple grade levels. Teachers might find it difficult to engage students who are high-achievers, but it was found that high-level learners were challenged and "showed extra interest" in this problem-based learning with manipulatives (Ali, Akhter, Shahzad, Sultana, & Ramzan, 2011).

In a study conducted by Cain-Caston (1996), there is evidence that third grade students were motivated to learn mathematics using manipulatives and out-performed peers in an end of the year norm-referenced assessment. As compared with students who did not have the opportunity to use manipulatives in math lessons, these students showed significantly better scores in each category of the California Achievement Test. These results indicate that students are more motivated to learn math with the use of manipulatives; therefore students perform better on national assessments (Cain-Caston, 1996). Teachers might also find motivation in using these techniques in order to raise the class scores which are seen to be a reflection of his or her ability.

Surveys and Feedback

Other researchers have found that surveys and feedback offer important information about the influence of manipulatives on student motivation to learn math. For example, pre- and post- surveys have been given to students after a controlled experience with manipulatives in order to determine motivation (Hougas, 2003). Also, there are studies that allow instructors to provide feedback and take surveys which indicate the effectiveness of manipulatives and a different perspective on student motivation (Averis, Glover, & Miller, 2004). For example, research by Averis, Glover, and Miller (2004) used surveys to learn about student motivation with interactive white boards through the instructor's point of view. They found that motivation and interest increased with this manipulative. Surveys of students also allow for comparisons of experiences with different types of manipulatives, such as the research of J. Suh in 1994. Suh (1994) found that motivation did not increase depending on the type of manipulative, physical or virtual, but rather by the students' learning experiences with the manipulative.

Teaching fractions can be a difficult task for any teacher of mathematics because students come to

the lesson with many mathematical misconceptions that the teacher must address. However, Hougas (2003) has found that using manipulatives when teaching fractions to sixth graders can assist with student motivation towards the content. The pre- and post-surveys of these sixth graders indicated that using engaging manipulatives, as compared to traditional paper and pencil methods, increased the "attitudes of students toward fraction concepts" (Hougas, 2003).

Physical, hands-on manipulatives have been shown to improve motivation as compared to the traditional methods of teaching mathematics and researchers have found that virtual manipulatives produce similar results (Averis, Glover, & Miller, 2004). Technology in the classroom has become an exciting and innovative way to capture the attention of the students and differentiate the instruction for all learners. Integration of technology can increase students' motivation, as shown in research conducted by Averis, Glover, and Miller (2004). In this study, the use of virtual manipulatives through an interactive white board was found to be motivational to students and teachers. The survey that was given to the instructors after the experience of teaching with these manipulatives indicated that lower-level students benefitted by seeing the visuals and the presentation which allowed for reinforcement. Also, the teachers reported that the intrinsic motivation of the students increased as a result of focusing the attention onto the interactive white board rather than the teacher (Averis, Glover, & Miller, 2004).

A study conducted by J. Suh in 1994 looked at motivation and performance of third graders between virtual and physical manipulatives in mathematics. Surveys showed that student motivation was based on the student learning experiences with the manipulative, resulting in no significant preference towards one manipulative over the other. However, student performance was higher in the group that used virtual manipulatives rather than the physical manipulatives. This study stressed the importance of using manipulatives strategically and allowing students to become acquainted with the resources available in order for optimal student success (Suh, 1994).

Observations

Classrooms where manipulatives are utilized in mathematics can reveal important information about the impact of manipulatives on student achievement. The research includes the implementation of virtual manipulatives, as explained in the study by Kolodner and Lamberty (2004), effective strategies for specific students, such as research done by Diezmann and Watters (2004), and the detection of specific ways to maximize the benefit of manipulatives, which can be explained by Baturu, Cooper and Proctor (2002). These studies emphasize the use of observations in learning about motivation and achievement with the use of manipulatives in elementary math classrooms.

Kolodner & Lamberty (2004) used observations and informal inquiry to learn about the motivation of students using DigiQuilt, a virtual manipulative that aids students in learning concepts such as fractions. The study looked at third to fifth grade classrooms that used the tool and the researchers observed the response. These observations focused on the student motivation to learn the content, which was found to increase as students learned the material using the manipulative (Kolodner & Lamberty, 2004). This study is important because the researchers find an increase in motivation in the use of a manipulative to increase understanding of a specific mathematical concept.

One challenge for general education mathematics teachers is motivating students who easily understand much of the material and are considered to be "gifted" students (Diezmann & Watters, 2004, p.2). The purpose of this study was to motivate these students by adding challenge and interest into the curriculum and developing strategies that allow for this. The researchers found, through observations, that "extending manipulative use" allowed students to extend on kinesthetic representation which aids higher-level thinking (Diezmann & Watters, 2004, p.2). The importance of manipulatives with motivating gifted students seems to be vital to push them towards the higher tiers of Bloom's Taxonomy, which teachers should aim to have students achieve.

Observations can be important, especially when attempting to learn about specific case studies of lower level learners, such as the case in the research of Baturu, Cooper & Proctor in 2002. The researchers observed several students who were in the seventh year of schooling but performing below grade level and the influence of physical and virtual manipulatives with learning the concepts of fractions. One student who was a typical representation of the whole became the focus of the observations. At first, the student struggled with being moti-

vated to use the manipulatives because of a lack of understanding of how to use them. He was easily frustrated and had a negative attitude towards putting forth the effort to learn the content. However, when the student was provided with extra assistance and attention towards understanding the use of the different manipulatives, he began to develop a deeper understanding of the concept of fractions which increased his general attitude for the subject (Banturo, Cooper & Proctor, 2002). This study allowed the researchers to understand the influence of manipulatives with motivation to learn math when the instructor provides detailed instructions and assistance in understanding how to use the manipulatives properly (Banturo, Cooper & Proctor, 2002).

Conclusion

Previous research has shown that the use of manipulatives in elementary classrooms can be beneficial towards motivating students in the area of mathematics. This has been shown through data with formal testing, such as the research conducted by Ali, Akhter, Shahzad, Sultana, & Ramzan (2011). The research done using surveys and feedback found that attitudes and motivation has increased with the use of manipulatives in the mathematics classrooms (Hougas, 2003). Kolodner & Lamberty (2004) demonstrated that motivation can be increased by implementing alternative forms of manipulatives into mathematics instruction, which was shown through observations. Little research has been conducted to determine the effect of specific manipulatives on motivation or achievement with particular groups of students, such as special needs, lower socio-economic status, or specific genders. Also, there is little research that searches for a correlation between motivation, achievement and using specific manipulatives with particular math concepts, more specifically with instruction on fraction concepts. We know little about which manipulative is most effective in increasing motivation or achievement with elementary math students. We have found that using manipulatives in mathematics instruction increases motivation in elementary students. To advance on these findings, I investigated the use of specific manipulatives to increase students' achievement during a unit on fractions. More specifically, I researched the effects of specific manipulatives on concepts such as the unit of reference, number line conceptions, fraction identification, and circular and linear representations of fraction conceptions. This will provide educators the tools to help students succeed, be motivated to learn and eliminate fraction misconceptions.

Methodology

This study is a mixed-methods study intended to learn about the effectiveness of specific manipulatives to resolve a common misconception for elementary students in the area of mathematics. Many students struggle with fractions, specifically the concepts of the unit of reference. This study is designed to investigate students' conceptualization of fractions and the impact of manipulatives to increase student performance. This was done by using quantitative analysis of pre and post assessments and qualitative analysis of sample student interviews and artifacts.

Design of Study

This was a case study of third and fourth grade students at a small private school in southeast Georgia. The lesson interventions were progressive throughout the entire week of instruction. The lessons began with fraction identification and progressed towards addition, subtraction and multiplication fraction concepts. The manipulatives and instruction placed a strong emphasis on the unit of reference, number line conceptions, and circular and linear representations. Also, the instruction utilized application word problems for students to increase understanding of the concepts and emphasize the importance of the content knowledge.

Specific manipulatives that were used during instruction include linear and circular representations of fraction concepts. For example, students used fraction bars in conjunction with number lines in order to increase understanding of relationships between various fractions on a number line. Also, students worked with fraction circles, which are plastic circles that are partitioned into various fractions. The pieces are detached and can be placed together with other pieces to form a whole circle within a circular mold. In addition, students also used hamburger mats, number line mats, pizza party fractions, candy bar fractions and an estimation rope. Each of these manipulatives emphasized the importance of the unit of reference; however, the estimation rope challenged students specifically with concepts about the unit of reference as well as number line conceptions.

In order to ensure that the sample population had knowledge of fractions and the concept of the unit of reference, a pre-test was designed to measure student knowledge. A sample group of students explained their reasoning and thought process behind their answers during an interview with the researcher, which adds clarification to the exam results. This sample group participated in the interviews during a school break, where interviews were recorded and later transcribed for analysis. The sample population had the foundational knowledge of fractions and mathematics to complete the exam. The students were taught in two groups divided by grade level using each of the manipulatives. The students were asked which manipulatives were most beneficial to increasing understanding during student interviews. Also, post-assessment data indicated the effectiveness of these manipulatives on fraction conceptions. The lessons took place May 14-17 with 30 minute lessons each day. The lesson artifacts were collected and analyzed to gain insight on the influence of the intervention. A post-test was conducted to determine if common misconceptions were resolved and how the use of manipulatives affects student performance.

Research Questions

1. What are students' conceptions of the unit of reference when working with fraction word problems?
2. Which manipulatives will help increase performance when working with the unit of reference?

Sample Population

The sample population included students enrolled in the 3rd and 4th grades at a small private school in southeast Georgia. The sample consisted of 21 students, 12 students in 4th grade and 9 students in 3rd grade. There were 7 girls and 2 boys in the 3rd grade classroom. Also, there were 5 female and 8 male 4th grade students in the sample population. There were two lessons per day, which were divided by grade level. The fourth grade students were taught in the first group and the third grade students were taught in the second group. Each group used the same manipulatives and the same word problems within the lesson interventions.

Data Collection

Each student took a pre-test at the beginning of the study. Students were taught in groups divided by grade level. Following instruction, students were given a post-test to measure any improvement compared to the pre-test. Interviews took place after students took the pre-test. Recordings of student interviews were collected and transcribed to provide a clearer demonstration of student thinking and knowledge. During the interviews, students were asked to explain the thought process behind their answers, with specific emphasis on the open-ended questions. These open-ended questions allowed for several correct responses and provided an opportunity for the researcher to learn about the students' perception of the unit of reference. The sample interview students were asked to provide feedback in the process of solving problems. This feedback required students to draw picture representations of their thought process and explanations behind some of the questions from the pre-assessment, which provided further clarification of student knowledge. Photocopies of artifacts from the sample interviews as well as the tests were collected for analysis. Also, the researcher provided an alternative method of teaching through the use of various manipulatives in an attempt to increase student understanding, from which artifacts were collected for later analysis.

Data Analysis

The data collected from the pre-test was analyzed by student performance on each question. This allows for increased achievement on the conceptions of the unit of reference. The post-test provided important data on the influence of manipulatives in the mathematics instruction of fractions. The recorded interviews and responses were examined for common themes in student comments and to address common problems with the interventions. Also, photocopies of artifacts of key elements in the interactive interviews were analyzed to determine student knowledge of content. This analysis provided insight into the thought process of the students and the conceptions of the unit of reference when working with fraction word problems.

Findings

During this investigation, I studied the effect of manipulatives on students' understanding of fraction concepts and the students' conceptions of the unit of reference when working with fraction word problems. The students were administered a pre- and post-test to determine student conceptions and depict any changes in conceptions after the interventions. Interviews were given to the sample of the students to investigate the students' thought process behind their answers on the pre- and post-assessments. They were given 30 minute intervention lessons over a course of a week, with the final day of the week consisting of the administration of the post-assessment. The intervention lessons consisted of using both linear and circular representations of manipulatives to examine fraction concepts. I hope to demonstrate student achievement between the pre- and post-test through the data analysis. The data emphasized the effects of manipulatives on mathematics instruction of fraction concepts. Additionally, I hope to effectively present the qualitative data that reinforced the assessment findings about the students' conceptions of the unit of reference with fraction word problems.

Analysis of Interviews

Several misconceptions were noticed with the pre-test interviews. Eleven students were interviewed on the basis of pre-assessment results. I chose these students because of patterns recognized in their work that indicated some type of misconception that was common throughout the entire group. However, I discovered, through the interviews, that there was some misunderstanding of questions that involved the sharing definition. Some students, such as Kelly indicated that question 8 involved 5 people because the character in the word problem was sharing with his four friends as well as himself. I made sure to address concerns that were common with many students, during the intervention lessons.

Students demonstrated a better understanding of fraction concepts through the post-test interviews. The same eleven students that were interviewed for the pre-test were asked questions about the post-test. Many of these students increased significantly in performance as a result of the intervention lesson using the manipulatives. The students indicated the usefulness of the number line mat that they used to walk, skip and jump to solve the problems, as well as the estimation rope activity. These two activities were specifically mentioned as manipulatives that helped to increase understanding of the content. However, Casey had a significant amount of trouble recalling the information for the post-test and this resulted in her shutting down during the interview process. The interviewer did not ask questions about problems where the students demonstrated mastery, rather she focused on the concepts that were still unclear for the students. This helped highlight remaining misconceptions and identify areas that could be strengthened within the intervention and assessment.

Sharing Definition Conceptions

A common misconception was identified with the sharing definition. Many students attempted to explain that the procedure should include multiplication, or some other algorithm besides division, or fractions, in order to solve the problem. Sally explained the following on question 6: "I thought... each pieces of pizza had three parts and each person ate two pieces of it. I multiplied and got 6." It seems here, that Sally was unsure of the task she should perform, so she simply decided to multiply. This indicates a clear misunderstanding of the sharing definition of fractions, which was frequently repeated with other students in the sample.

Many of the misconceptions regarding the sharing definition of fractions were resolved after the intervention lessons.. Carl expressed concerns with the method of solving the problem. He explained "I multiplied three times two. I guessed and I got 6, and I didn't really do anything with the 3 friends." This student demonstrates a clear misconception of the sharing definition; however, this student does not accurately represent the majority of student conceptions.

Fraction Identification Conceptions

Patterns were recognized with misconceptions of fraction identification, whether identifying shaded regions of a partitioned circle or using a number line. Shelly examined a fraction identification problem that

is represented visually with a circle. She explained her reasoning behind her answer was that the shaded parts of the circle is the number that is placed on the top of the fraction, and the "white pieces," or unshaded parts, represent the number that is placed on the bottom of the fraction. A large number of students had misconceptions of fraction identification using the circular representation.

Question 16 asks students to name the fraction that is indicated by an arrow pointing to two-thirds. Question 12 has a similar format, but the arrow is pointing to three-fourths. Taylor explained question 12, "Because, isn't this one-fourth and that one is one-half?" and correctly answered that the arrow indicates three-fourths because it includes one-fourth and one-half. However, on question 16, she was unable to explain why her answer was three-fourths, when the number line was segmented into three equal parts. This highlights a common misconception of fraction identification using the number line. Other students indicated that the fraction would be a particular way based on the whole number it was closest to. Also, other students explained that the hashes represent 2, so they counted by twos and put this number above the whole number that was closest to the arrow. Sally expressed the following when explaining her answer to question 12 using the number line, "because each of these means 2, so it would be 2, 4, 6, 0, and then the (whole) number is 0, so it would be 0," and her answer was $6/0$. This exposes misconceptions with identifying fractions as well as misconceptions about the number line.

On the post-test responses, students seemed to still have misconceptions with identifying fractions using a number line. A large portion of the students improved performance with this concept; however, a few students maintain confusions or misconceptions regarding identifying fractions using the number line. For example, Sally expressed an understanding of the unit of reference, "It went 0 to 1 in the whole thing," but she was unable to make the connection with the partitions of the number line, "I wasn't exactly sure about that. I was trying to think, but I forgot." Several students who still struggled with these concepts simply stated that they could not recall how to correctly label the number line. I would suggest that these students should be provided with number lines that have various partitions. The students could use these number lines to practice identifying fractions. The intervention lessons involved students working with number lines that had various partitions; however, the students could use more direct support with labeling these number lines correctly.

Number Line Conceptions

Using the previous example with Sally, we can see that there is a common misconception that a hash, or partition, represents the same amount on each number line; in this case, the student conceives that the hash always represents 2. This demonstrates the need to use multiple representations of number lines, so that students can form more accurate conceptions of the number line and its functions. Larry exposes a possible reason for students' misconceptions of the hash representing a specific amount each time by explaining, "This is like a ruler, but it is not" when describing a number line. This same student demonstrated his number line misconceptions when working with a number line that was partitioned into thirds, on question 10. The student solved the problem and decided that the answer was six-thirds "and you can reduce that and (get) one-half." In order to expose his misconception, I asked him to identify the location of his answer on the number line. He incorrectly placed an arrow on $1\frac{2}{3}$. This is a misconception with fraction identification and the number line, which was shown to be common throughout the sample. In order to supplement these conceptions, I used various representations of interactive number lines during the intervention lesson. I realized that these misconceptions of the number line should be strongly emphasized during instruction, which resulted in developing learning experiences that met the needs of all learners. Some of the manipulatives I used to strengthen student conceptions included: comparing fraction bars to number lines, using an estimation rope to estimate a fraction and its placement on a number line, as well as a number line floor mat where students were able to walk (fraction identification), jump (fraction multiplication) or skip (fraction addition and subtraction) on the number line, depending on the type of problem.

As previously stated, some students maintained misconceptions regarding the number line, which was demonstrated in the post-test interviews. The following dialog with Shelly demonstrates the misconceptions of many students regarding labeling the number line.

"Well I counted 1, 2, 3, and then I put 3 here (pointing to a point on the number line). Then, I just got the numerator as 0 and the denominator as 3?" "The denominator is 3? Okay, so you have $3/0$ and you said

the denominator is 3 and the numerator is 0?" "I think I got those backwards." "Number 16, you answered 2/0, so can you explain that to me?" "I counted 2 and then I got 2/0 so then the numerator is 2 and the denominator is 0."

This student has obvious misconceptions with the unit of reference, fraction identification and the number line. This student represents a small percentage of students that maintained misconceptions regarding this content. Many students were able to make a large progression towards mastery of the number line; however, there were a few students who could not let go of their misconceptions. I believe these students could use extra support in breaking down misconceptions and using various manipulatives to strengthen their skills with identifying fractions, the unit of reference and using a number line. These students should receive immediate support regarding these conceptions; because of these conceptions make up the foundation of a large area of higher level mathematics. With their current conceptions, these students should not move on to higher level mathematics..

When asked what helped students the most with learning these fraction concepts, Keith represented a majority of the answers with the following dialog.

"So, is there anything that you noticed from the very first test to this test that made this test easier? Is there anything that we did this week that helped you out?" "Well, on some of them, what you have taught us, like the number line and things, helped (me)." "Which (number line) helped the most? The one that you walked or the one that you used the fraction bars?" "The (number line) that I walked (helped the most)."

This dialog is evidence that many students felt more comfortable with number line concepts after using the manipulatives in the intervention lessons. The results from the assessments and the interviews indicate that a large number of students had more accurate conceptions of the number line prior to the intervention lessons. These lessons and manipulatives can be replicated to provide extra support for students who are struggling with these concepts. It seems that some students, such as Shelly, could benefit from extra practice with the manipulatives and learning experiences. Students learn at various speeds, and a week of interaction with manipulatives might not be long enough to reach all students with number line misconceptions.

Circular Representation of Fractions

There were common mistakes during the pre-test where students were unsure which representation to use to help them solve the problem. The questions were designed to be represented either with a linear or circular representation. Students were asked to draw a picture of their problems in spaces provided in order for the researcher to gain further insight into their conceptions of fractions. Misconceptions of circular representations of fractions became a common theme throughout the student sample. This can be attributed to many reasons, including a lack of content knowledge, small exposure or difficulty in drawing.

Kelly used a triangle representation to solve question 1, which was presented with circular representations of pizza. This student said, "Well, I split it apart and the triangles are ... of pizza... I shaded 2 and then (I shaded) the remainder and then there is 5 in all in the remainder." She later explained that there were three whole pizzas. Even though the student answered the problem correctly, there appeared to be a disconnection from the triangular representation and the problem. However, the student clearly identified how many triangles created a whole pizza by placing a box around a whole pizza. Since the particular manner in which one represents the problem is not critical to understanding or accuracy, the lesson intervention did not focus on matching word problems with the appropriate representation. Instead, the intervention explained the importance of multiple representations of fractions and knowing each of these in order to solve problems accurately.

The post-test interviews did not reveal a significant change about the conceptions of circular representations of fractions. As previously stated, the interventions were not focused on teaching students how to draw circular representations of the problems; rather, the lessons focused on why one would use a circular representation and the benefit of using various representations for word problems. The lesson was more heavily geared towards linear representations of problems. Knowing how to use and understand the number line is very important; it serves as a great tool for students to translate the understanding of a certain representation onto an alternative representation. The students did correctly utilize the circles provided on the post-test and demonstrated mastery of this representation through post-interviews. For example, Jim explained his circular

representation of a problem like this, "I divided it. I put 3 of them (pizzas shown by circles) into 4 equal parts and I said that each person would get $\frac{3}{4}$ of the pizza." This is a valid representation of improved student conceptions with circular representations of fractions.

Unit of Reference Conceptions

A major theme that was identified with student interviews was a lack of accurate conceptions of the unit of reference. One of the most blatant misconceptions of the unit of reference was exposed with the addition of fractions. Students were provided problems that contained two fractions and were asked to determine the sum. Many of the students would simply add the number on the top portions of the fractions and add the numbers on the bottom portions of the fraction and conclude that the result of these sums created the new fraction. This demonstrated a common misunderstanding of the unit of reference.

For example, question number 9 asked students to find the sum of three-fifths and one-fifth. Jim provided a typical response, "I added three plus one and four plus five." This student continued to explain that he "reduced" his answer, which resulted in two-fifths. If the student understood the unit of reference, or what the "whole" represents, the student could not possibly conceive that the answer was four-tenths or two-fifths. In order to address this misconception, the intervention included the use of fraction bars. The students first explored the answers to word problems and then compared these answers to the fraction bars. The students would see the difference between four-fifths and four-tenths. The fraction bars used in conjunction with the number line provided an opportunity for students to compare and contrast various problems and their fraction bar equivalents with a single unit of reference. These visuals were used throughout each of the intervention lessons to reinforce appropriate conceptions of the unit of reference.

Shelly says, "I counted these two (pointed to the shaded pieces) and I got two (pointed to the numerator) and there was four more left (that were unshaded), so then I put the four because there were two shaded and four plains (unshaded), so then I put them together and I got two-fourths." Her response highlights a common misconception with the unit of reference using circular representations. This student believed that the shaded pieces of a circle represented the top portion of the fraction and the unshaded pieces represented the bottom portion of the fraction. The common misconceptions of the unit of reference with circular representations were addressed in the intervention lessons with various manipulatives. The manipulatives used included a fraction pizza party, where the students were manipulating parts of a cardboard pizza that represented a fraction, and plastic circular fraction pieces that could easily be manipulated. As previously stated, the interventions focused on many representations and manipulatives, but a larger emphasis was placed on the liner representations using the number line.

Student conceptions of the number line improved dramatically between the pre- and post-tests. The post-test interviews highlighted a few areas of weakness with this concept, but the majority of students increased their understandings of the concept. For example, Larry demonstrated a misconception of the unit of reference with number 3, which used circular representations.

"I divided the circles that were provided on my page into fourths and I shaded in 3 on each one." "Okay." So, I got 8, $\frac{3}{8}$ because there is these 3 left." "Okay, so where did you get the 8 from?" "I think it was from here." Student counts. "Okay, so all of the shaded parts were the 3 and the 8 shows all of the parts that were not shaded?" The student nods and agrees.

This student demonstrates a common misconception with the unit of reference. Although many students eliminated this misconception during the intervention lessons, some students were still unable to make the connection with specific word problems. This could also be a result of the instruction focusing on linear representations with the number line, rather than the circular representations. However, the students were exposed to various circular representations, including the hamburger mats, the fraction pizza party and fraction pieces which fit into a circle. I believe this student, and others that maintain this conception, should be provided with more learning experiences that involve the use of manipulatives in various forms.

Analysis of Open-Response

Various forms of information were gathered from the open-response questions included on the pre- and post-tests. The students were given an opportunity to explain their answers through a visual or written

description. Some questions provided circles or correctly partitioned number lines for students to utilize during their explanations, and other questions left lines for students to write or an empty box for students to draw visuals without support. These open-response questions highlighted some key misconceptions that students held prior to the intervention lessons. I utilized this valuable information to create the framework for the intervention lessons.

Sharing Definition Conceptions

Many students were challenged with the problems that worked with the sharing definition of fractions. On question 7 on the pre-test, the problem presented requires the ability to use concepts of sharing with circular representations; the correct solution is two-thirds. Some students divided the two circles into two pieces and others were able to understand that it should be divided into 3 pieces. However, many students had similar conceptions as Timothy who drew 5 equal pieces on both circles that were provided and answered 2. This demonstration indicates little to no comprehension of the sharing definition problem, which is critical for developing fraction concepts.

Post-assessment open-responses indicated a dramatic improvement with student conceptions regarding the sharing definition of fractions. On question 7, most students correctly partitioned the circle into three equal parts. There were no additional representations of the problem, except for an algorithm. Many students chose to shade the fraction, while others drew patterns or numbered the fractions. Question 3 also required students to use the sharing definition with a circular representation and many students correctly partitioned the three circles into four equal parts. Some provided numbers and others provided patterns to distinguish between the amounts each friend received. Jim correctly partitioned the circles, though he only shaded two of the pieces and his answer was two-fourths. However, this was not a typical representation of the responses. Students' responses to these two questions indicate a clear improvement from the pre-test results. Also there were similarities in demonstrating the correct answer with shading and patterns indicate a solid understanding of the content for most students.

Fraction Identification Conceptions

One of the foundational skills with fractions is identifying fractions. Many students struggled with this concept during the pre-test. On question 3, the students were provided 3 circles and asked to use these to solve the problem. Many students were capable of dividing the circles into three equal parts; however, the students would not shade anything, indicating little understanding of fraction identification. On another problem, Shelly accurately drew a circular representation, but put down an inaccurate answer. This shows that the student could solve the problem visually, but could not determine the answer from the visual drawn. Another example of misconceptions of fraction identification can be found with Kathy, who demonstrated the skills to accurately shade pre-divided circles and even indicated what the "whole" would be in a solution, but answered the problem with a completely inaccurate response, such is the case on question 14. These disconnections with fraction identification cause students to form misconceptions about more complex components of problem solving with fractions. During the intervention lessons, I focused on strengthening student conceptions of identifying fractions.

Students demonstrated a better understanding of fraction identification with the evaluation of the post-test open-responses. For example, student 44 explains "there are 3 parts. The second one is the one being pointed at (on the number line). So, it makes if $2/3$." On question 16, many students correctly identified the parts of the number line. "The first mark is $1/3$, then $2/3$," wrote $1/4$. These are good representations of the responses from the sample population. The students still indicated some weaknesses with number line conceptions, but fraction identification appeared to improve dramatically.

Number Line Conceptions

There are several misconceptions that were highlighted with the open-response questions concerning the number line. For example, on question 10, Carol wrote the following under hashes on a number line that was divided into thirds: 0, $0/3$, $0/6$, 1, $1/3$, $1/6$, 2, $2/3$, and $2/6$. This indicated that the student did not understand the unit of reference or how it relates to the number line. The student believed that the whole number to the left of the hash went in the numerator and the hashes represented 3 or 6 in denominator. Another example of a number line misconception was depicted by Kathy. The student wrote the following in an

open-response to question 12: "I got $\frac{1}{3}$ by counting the lines going down. There is a 1 near the last line so I got $\frac{1}{3}$." Isaac wrote "first I went from $\frac{1}{2}$, and then after $\frac{1}{2}$ I went to $\frac{1}{3}$ " on question 16. This shows a belief that the number line provided should read "0, $\frac{1}{2}$, $\frac{1}{3}$, etc." These are strong examples of the relative misconceptions that the majority of the sample students demonstrated. We challenged students to think about these concepts during the intervention lessons while using various manipulatives. One of the favorite manipulatives seemed to be using the number line where students walked, jumped and skipped while working with fraction word problems.

On the post-test, Whitney correctly identified each of the hashes on the number line on question 8. The problems involving the number line demonstrated a dramatic increase in performance on the post-test. The students seem to have a better conception of the number line. This could possibly be a result of the heavy influence of the number line and the researcher's persistence that students should be familiar with this tool. One student drew a linear representation below the number line on question 8, rather than utilizing the tool of the number line. With the exception of this student, the students used the number line as intended on question 8. Overall, the students' responses indicated a better understanding of the number line and the various uses of the number line with identifying fractions and the unit of reference.

Circular Representation of Fractions

Many students could not draw an accurate circular representation of the problems in the open-response questions on the pre-test. This is somewhat understandable, as many students are unable to partition a circle correctly. For example, Timothy drew four parts of the pizza on question 3, but there were three small parts and the rest of the pizza created the fourth piece. No shading or indication of further explanation was provided for this solution. The focus of this research study was not determining if students could use accurate representations of the solution, rather, to determine the conceptions of the unit of reference. Therefore, I did not focus on teaching students to accurately draw circular representations of fraction concepts. Instead, I provided circular representations of manipulatives that helped students to visualize the fraction concept and the word problems.

The open-response portions of the post-assessment demonstrated a dramatic improvement in the student's conceptions of circular representations while working on word problems. For example, question 1 asked students to add two fractions using a circular model in the problem. The majority of students accurately drew out a circular representation or an algorithm. Gabby drew two circles divided into 5 equal parts. She shaded two-fifths of the first circle and one-fifth of the second circle. She placed an addition sign between the two circles and an equal sign followed by the correct answer after the second circle. This is a good example of the majority of the answers. Isaac was the only student to use a linear model of representation for the circular representation problem. This alternative representation could be attributed to the intervention lessons where the teachers had students create relationships between various types of manipulatives in order to create better conceptions of the unit of reference.

Unit of Reference Conceptions

In the pre-test results, there was little evidence with the students' open-responses that students had accurate conceptions of the unit of reference. On question 11, Kimberly indicated a misunderstanding of the unit of reference by writing out $\frac{2}{3} \times 3 = \frac{6}{9}$ vertically and placing a question mark in the blank. The student was multiplying the numerator and the denominator by the whole number, which is a common misconception students have about unit of reference. Shelly wrote "There are 2 shaded part(s) and 4 plane (unshaded) parts. I put those together and I get $\frac{2}{4}$." This is the misconception of the unit of reference. The student understood the facts, but did not recognize the "whole" unit and the relationship with the fraction solution. However, some students expressed an understanding of the concept on question 11. For example, Kimberly wrote "I got it by counting the whole circle parts and I saw there (was) 1 unshaded and 2 shaded so that (was) 2 out of 3 which makes it $\frac{2}{3}$." The main focus of the intervention lessons was to provide learning experiences for students to create a better understanding of the unit of reference. This requires the use of various manipulatives in diverse contexts. These learning experiences were aimed at providing students an opportunity to visualize what a fraction is and the relationship of the fraction with the entire unit.

On the post-test, for question 11, Isaac noted the following: "First, I saw how many pieces (were) in

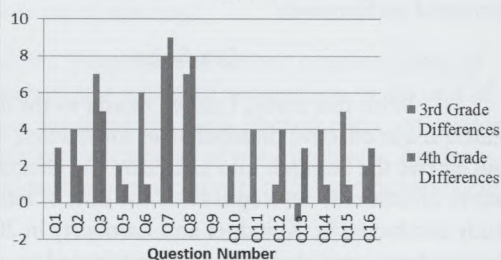
all. Then, I counted how many (were) shaded." Alex said "There (were) two shaded parts and six not-shaded parts, and then I put this together and (got) $2/6$." Sally explained "One of the circles has nothing shaded, so it doesn't equal anything. One (circle) has two pieces shaded out of three which is two-thirds." These examples on question 11 reinforce student conceptions of the unit of reference. Question 15 demonstrates another problem that had a significant change with the understanding of the unit of reference. Jim wrote "I counted the number of parts and the shaded parts. Then, put the shaded parts over the total." This student was correctly looking at a part of the whole, which is represented by all three circles. This student's conceptions of the unit of reference are appropriate and acceptable. Analysis of the open response questions and the interview data indicates that conceptions of the unit of reference appeared to have the largest improvement. This was a key component of the intervention lessons and the qualitative data indicates that manipulatives improve student conceptions of the unit of reference.

Analysis of Quantitative Data

In Figure 1, we see that student performance increased dramatically from pre- to post-test. We can infer from this data that student conceptions were changed, in a positive way, through the intervention lessons. Also, students demonstrated a better understanding of the content after using manipulatives in the intervention lessons. Each student had a base knowledge of fractions; however, the intervention lesson presented the content with the use of manipulatives. These manipulatives made a significant impact on student understanding of fraction concepts.

More specifically, we can see dramatic improvement with questions 7 and 8, which focused on the sharing definition using the number line and circular representations. This particular concept was emphasized more during the intervention lessons, because of the lack of conceptual knowledge about the content. These problems identify a weakness in the foundation of student concepts of fractions, so the improvement can be attributed to the intervention lesson that utilized the manipulatives during instruction and restructured the student conceptions. In contrast, we noticed a smaller change with procedure questions, such as question 9. This can be attributed to the fact that students had been taught the procedural method for fractions, even though they were lacking in the foundational concepts. This indicates that students were able to memorize or simply execute a procedure, without recognizing the purpose or reasoning behind the procedure. Because we noticed that students were lacking in some basic foundational knowledge, the intervention lessons focused on these concepts rather than the procedural methods. This is a reason for the small changes on the procedural problems, including numbers 9, 10, 13 and 14.

Figure 1: Overall Student Improvement Per Question



There was not a significant change in the results for addition of fractions; however, a small increase was noticed with addition word problems. In Figure 2, the data demonstrates the small changes with these concepts. This small change was likely because the students had already mastered the procedure of adding fractions prior to the lesson intervention. The pre-test acknowledged that students were familiar with these fraction concepts with eight out of nine 3rd grade students answering an addition procedure problem correctly, with a small decrease of 1 correctly answering the question during the post-test (See Q13 in Figure 2). I attribute this deficiency to a small human error that is an insignificant change.

I noticed a more significant change with procedure and word problems when students were multiplying fractions. Figure 3 shows the improvement of correct answers between pre- and post-tests. Third grade students showed a dramatic change with each question, such as an improvement of 6 correct answers on question 6. This is a 67 percent increase in performance between the pre- and post-tests. The data rein-

Figure 2: Addition: Word Problem vs. Procedure

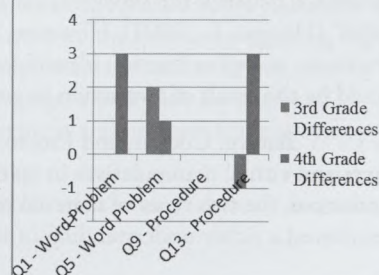
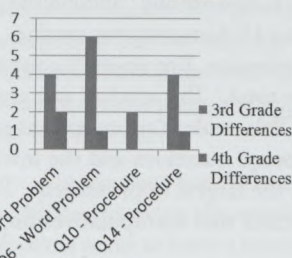
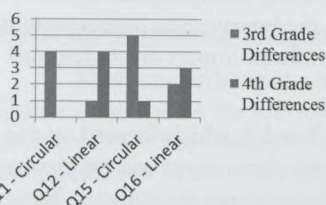


Figure 3: Multiplication: Word Problem vs. Procedure**Figure 4: Fraction Identification: Circular vs. Linear**

that there is a strong positive impact of manipulatives during mathematics instruction. There is a positive correlation between using manipulatives during fraction instruction and increased performance.

Conclusion

With this study, I aimed to add to the existing research about effective manipulatives for fraction instruction and extend the research into analyzing the effects of manipulatives on students' conceptions of the unit of reference. A study conducted by Kolodner and Lamberty in 2004 found that students were challenged and motivated to use the manipulatives to learn more about topics, such as fractions. The study focused on using manipulatives that involved quilts and designing quilts (Kolodner, J., & Lamberty, K., 2004). In this study, students were motivated by the use of a number line mat where they could walk, skip and jump to represent various fraction problems. The students enjoyed the opportunity to use kinesthetic learning to experience fractions in a new form. The post-interviews demonstrate the benefit of the number line mat as well as the estimation rope and fraction bars on motivation to learn about fraction concepts.

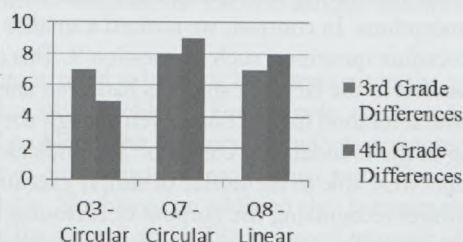
Hougas conducted a study concerning the use of manipulatives and explained that "there was no significant difference found in achievement between sixth grade students who used manipulatives and those who did not when working with addition and subtraction of fractions. The researcher found a significant difference between the experimental and control group as far as the attitudes of students toward fraction concepts" (Hougas, L., 2003). However, I found that student performance increased dramatically with addition of fractions, as well as fraction identification, multiplication of fractions, and division of fractions. This difference could be the result of a variation in grade level between the Hougas study and my study.

Baturo, Cooper, and Proctor conducted a case study in 2002 that analyzed the integration of concrete and virtual manipulatives in an elementary mathematics classroom. When Frank (the case study student) undertook the two types of material manipulations (real and virtual) together, the strengths of both forms reinforced a richer understanding of fractions and each compensated for the weaknesses of the other form

forces the positive impact of manipulatives on student understanding. The use of manipulatives during mathematics instruction increases performance on fraction word problems.

Progress was also seen when comparing types of representations of problems, such as linear and circular representations. In Figure 4, we can see that students increased performance in both linear and circular representations of fraction identification. As much as a 56 percent increase was noticed in the circular representation of fraction identification among 3rd grade students. Figure 5 demonstrates better performances across both linear and circular representations of fractions using the sharing division. A significant increase in performance is depicted among the 3rd and 4th grade students when using the sharing definition of fractions. These results indicate that using manipulatives during instruction of fraction identification and the sharing definition of fractions increases student performance in both linear and circular representations.

As indicated by the data, the students increased performance after the intervention lesson that included using circular and linear representations of manipulatives. Students strengthened performance with fraction procedures and made significant progress with fraction word problems. Students also showed improvement with circular and linear representations of fraction problems. This increase in performance between pre- and post-tests indicates

Figure 5: Sharing Definition: Circular vs. Linear

(Baturu, A., Cooper, T., & Proctor, R., 2002). This aspect of using various manipulatives to support each other was found in my research with circular and linear representations of manipulatives. The two representations reinforced student conceptions of the unit of reference, fraction identification, and fraction word problems. Students demonstrated their understandings on the post-assessments through a variety of circular and linear representations. If a student demonstrated a weakness with one representation, the student had the knowledge and the tools to use an alternative representation to determine the correct answer.

The results of a study conducted by Cain-Caston in 1996 indicate that students understand mathematics and have greater gains in mathematics when using manipulatives rather than worksheets that are used with third grade students (Cain-Caston, M., 1996). My study reinforced this finding by illustrating the ways in which third grade students' mathematical knowledge and skills increased with the use of manipulatives during instruction. I did not compare my results to a study conducted with worksheets. However, prior to the intervention the students in the sample population were taught using a traditional method of teaching mathematics with limited exposure to manipulatives. These students should have known these concepts prior to the lesson, but were still missing foundational knowledge until manipulatives were introduced in the intervention lessons.

These studies demonstrate clear evidence that manipulatives are more effective for improving student conceptions of mathematics. My study adds to this body of research by demonstrating how elementary students benefit from mathematics instruction that integrates manipulatives. I was surprised to find that some students continued to use circular representations of linear problems, even though evidence indicates that they had a better conception of the number line. I also found that illustrating circular representations of problems can be problematic, but when students are provided with pre-partitioned circles, the students can correctly utilize the circular representations. Many believe that good teachers should be equipped with the tools and strategies to transform student thinking, however, some students are reluctant to change their thinking pattern when they have been taught in a specific manner for a long time, regardless of the tools utilized. This was shown with the student hesitancy, sometimes reluctance, towards utilizing the number line, because their past teachers did not emphasize the importance or use of this tool.

I learned that students can increase achievement with the integration of various representations of manipulatives with fraction concepts. Specifically, students dramatically increased conceptions of the unit of reference by manipulating several tools, including number lines, fraction bars, pizza fraction party, estimation rope and others. Also, it is important to emphasize the multiple representations of word problems. Students should not be constricted to a specific representation of a word problem, especially if it does not hinder them from correctly identifying an answer.

The analysis of data proves that students will represent the problems in whichever representation they feel comfortable with, and it will not likely change their likelihood of answering the question correctly or incorrectly. It would be interesting to investigate the preconceptions of students in which mathematics word problems were represented circularly, rather than linearly. I would be interested to learn if there is a connection between conceptually understanding the problem and the representation that is used for the problem with a variety of students. This could be done by finding student preferences with types of representations and creating a study that highlights their conceptions of problems that involve alternative representations. An extended study could be conducted to learn about the effectiveness of the manipulative of the number line when used in other areas of mathematics. Alternatively, a research study could focus on the effects of specific manipulatives with specific age groups or specific students when teaching fraction concepts.

This study has demonstrated the importance of using manipulatives in the mathematics classroom to increase student achievement. I have already begun to utilize this information in my practicum teaching fifth grade mathematics. The project has encouraged me to research more manipulatives to use in various content areas. I have been inspired to further investigate the implementation of manipulatives with my students. I plan to learn more on specific manipulatives that increase student achievement and improve student conceptions among various content areas.

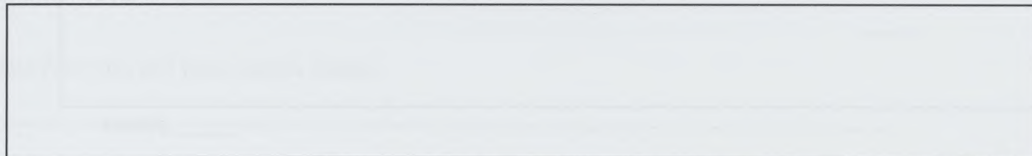
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Appendix: Pre-Assessment

1. Jack has $\frac{2}{5}$ of a pizza and Betty has $\frac{1}{5}$ of a pizza. How much pizza do they have together?

Draw Picture Here



_____ of a pizza

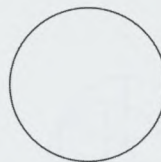
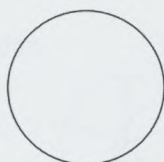
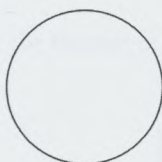
2. Chad takes a stick of butter and divides it into 4 equal parts and takes 3 of these parts in order to have enough butter to make one pie. If he needs 4 pies, how many sticks of butter does he need?

Draw Picture Here



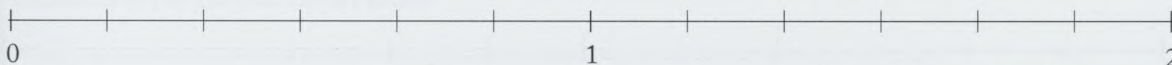
_____ sticks of butter

3. Jessica brought 3 pizzas to a party. She wants to divide the pizzas evenly for 4 friends. How much of a pizza does each friend get?



_____ of a pizza

4. Bobby has 2 candy bars and he wants to divide it equally among his 3 friends. How much of a candy bar will each friend receive?



_____ of a candy bar

5. Kate has $\frac{3}{5}$ of a loaf of bread and Kelly has $\frac{1}{5}$ of a loaf of bread. How much bread do they have together?

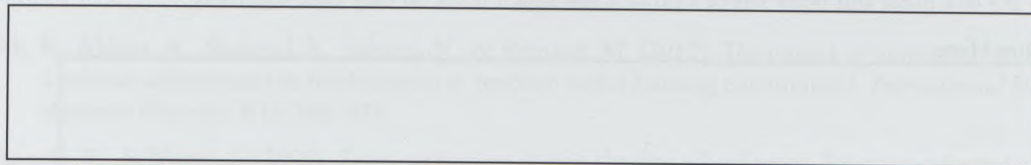
Draw Picture Here



_____ of a loaf of bread

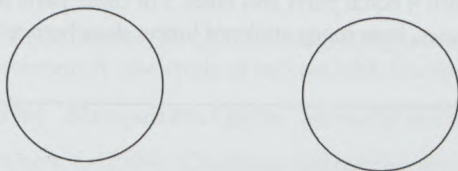
6. Nathan cuts a personal pan pizza into 3 equal parts. Nathan's friends need 2 of these parts to be full. If Nathan is feeding 3 friends, how many personal pan pizzas will he need?

Draw Picture Here



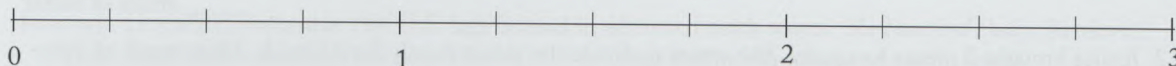
_____ pizzas

7. Sally has 2 cakes and she want to share the cake with 3 of her friends. If each of Sally's friends gets an equal part of the cakes, how much of a cake does each friend get?



_____ of a cake

8. Carl wants to divide 3 sub-sandwiches among his 4 friends. How much of a sub-sandwich will each friend get?

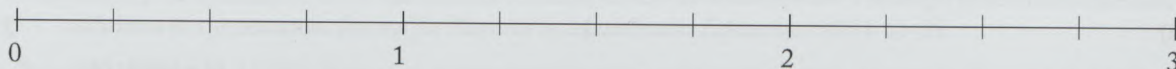


_____ of a sub-sandwich

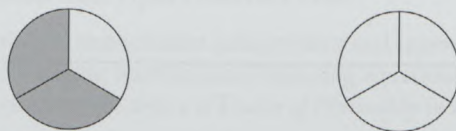
9. Add: $\frac{3}{5} + \frac{1}{5}$



10. Multiply: $3 \times \frac{2}{3}$

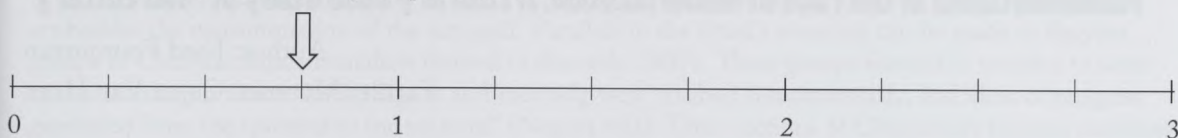


11. Name the fraction of the shaded region.



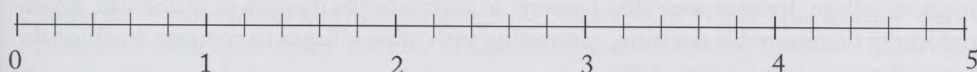
Explain how you got your answer below:

12. Name the fraction named by the point shown below.

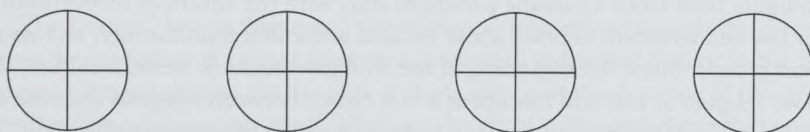


Explain how you got your answer below:

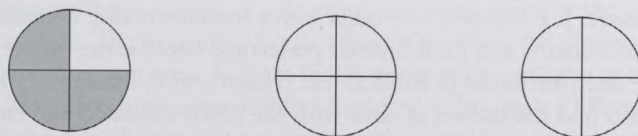
13. Add: $\frac{2}{5} + \frac{1}{5}$



14. Multiply: $4 \times \frac{3}{4}$

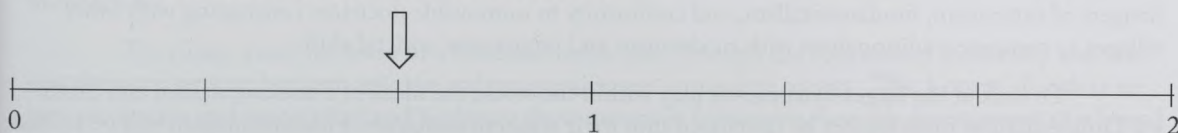


15. Name the fraction of the shaded region.



Explain how you got your answer below:

16. Name the fraction named by the point shown below.



Explain how you got your answer below:

Fundamentalism in the Face of Modernization: A Literary Case Study of "The Lottery"

Author: Ford Fourqurean

Faculty Mentors: Cayce Van Horn

ABSTRACT

This work looks at fundamentalism in the face of progressivism. Shirley Jackson's "The Lottery" will be compared to western and non-western cultures to look at traditionalism in the personal sphere and larger social dynamic, examining the way Jackson crafts a powerful message against ritualistic tradition through this work. The dangers of adherence to a fundamentalist policy can be seen within this work where an unnamed village carries out a yearly ritual that ultimately resulting in one person within the group to be stoned to death. Observing social dynamics within the village, the term Strategic Differentiation can be used to examine how people conform and follow the ritual and the dangers of diverging opinion. Through the eye of this ambiguous village, Jackson uses "The Lottery" to highlight the dangers of extremism, fundamentalism, and conformity to unmovable doctrine, contrasting with other villages to compare traditionalism with modernism and progressive societal shifts.

Science and Religion have faced a variable paradigm shift with the advent of modernization. Historically, they both offer law and structure to bring about societal and cultural uniformity, and also categorize and separate different groups. Since the beginning of the Enlightenment in western culture, the fissure that elevates science above religion as rule and law opens a vast chasm between religious doctrine and the newly instituted foundations of modernism and the later industrialization of western civilization. The continual grating tension between the newer ideas of science and social progress then undergoes a constant clash with the traditional religious values in place and can be seen to challenge the authority of traditionalists. An example from the midst of progressivism and modernization is the 1925 Scopes Trial where a science teacher from Tennessee, J. P. Scopes, is at odds with a fundamentalist Christian authority for teaching evolutionary theory to students and finds himself persecuted because the nature of the subject taught contradicted basic divine doctrine found in Biblical text (Nagata 483). Modern nations within the Middle East and North Africa also find themselves at odds with the newly educated and empowered youth of their countries demanding social equality and their attempts to question religious dogma. Islamic nations further exemplify this tension through their close ties of religious values to the state and connections between religious and political rule. The dangers of adherence to a fundamentalist policy can also be seen within Shirley Jackson's "The Lottery" where an unnamed village carries out a yearly ritual that ultimately causes one person within the group to be stoned to death. Observing social dynamics within the village, the term Strategic Differentiation can be used examine how people conform and follow the ritual and the dangers of a diverging opinion. Through the eye of this ambiguous village, Jackson uses "The Lottery" to highlight the dangers of extremism, fundamentalism, and conformity to unmovable doctrine, contrasting with other villages to compare traditionalism with modernism and progressive societal shifts.

To look at the larger dynamics at play within the work, the ideas of Fundamentalism and Strategic Differentiation must further be developed into their respective subjects. Fundamentalism will be looked at as a term for "attachment to a set of irreducible beliefs or a theology that forestalls further questioning" (Nagata 481). Strategic Differentiation develops from Strategic Balance Theory where "firms balance the benefits of reduced competition against the costs of reduced legitimacy" (Deephouse 148). The term, while applied economically to firms within a market, will be used to show the social positioning and posturing of people within the village. It will help to explain the acceptance of the ritual. The story will be examined internally and externally with each family within the singular market of the village interacting internally, and externally where the village as a whole will be compared to other villages as larger firms. Surrounding this, conformity to set rules in the midst of other villages changing around them will set up this village to emphasize Jackson's theme and further separate this village from more moderate firms.

Jackson uses the ambiguity of the ritual's origins to show a loss of meaning and purpose for the act besides the consummation of the act itself. Parallels in the ritual's meaning can be made to the first groups of Christian fundamentalists formed in the early 1900's. These groups formed in reaction to society's secularization where "both religion and meaning were crushed simultaneously, and ideas of progress gravitated from the spiritual to the material" (Nagata 482). These factions of Christianity became reactions to the fact that "religion ha[d] been demoted from its foundational position as the ultimate repository of meaning, answering the questions of why as well as how, which the sciences have not been entirely able to fill" (Nagata 482). These groups then look into their own rituals as the dominant rule of law. The villagers of "The Lottery" hold onto the elements of their ritual as dogma and flow blindly by this order. No one wants to "upset as much tradition as was represented by the black box" (Jackson 137). Every year, the villagers go through the dogmatic preparations of the ritual and have a longstanding, set tradition for the ritual process. Jackson never offers any theological or other explanation behind the ritual and makes the original point of the task lost to both the readers and villagers. The ritual takes on a different form than its intended meaning and "has progressively shed its religious [traditionalist] clothing and insinuated itself into forms of nationalism and other ideologies" (Nagata 483). While "The Lottery" does not contain strong nationalist undertones, the idea of separating and ostracizing dissenters holds the same form within the story. The ritual then takes on different cultural meaning to create a cohesive unit and develop its own cultural identity. Jackson does not show the village's external cultural development but focuses on the development of groups who conform or dissent.

"The Lottery" brings Strategic Differentiation into effect through the external effects of other villages that do not follow the ritual then turns inward to individual dissent in the form of Mrs. Tessie Hutchinson. Villagers discuss the dangers of those who quit the doctrine of the ritual and elevate the ritual to the pillar of modern society itself. Without the ritual, villagers believe that people will "be wanting to go back to living in caves, nobody [will] work anymore, [they will] live that way for a while" (Jackson 139). The term "that way" can be interpreted as living with no force to direct their life and facing societal devolution. Jackson has the elders of the village mimic the stance of Hobbes' Leviathan where the human condition only grows through strict control. Social separation takes shape in the separation of atmospheres at different points in the work. The beginning keeps a fluid style while the process of drawing lots is characterized by anxiousness and nervousness. Jackson builds the tension until the point where Mrs. Hutchinson is chosen. Mrs. Hutchinson exemplifies the ideas of Strategic Differentiation in her sudden change in attitude. Before being chosen, she conforms to the ritual because it is more profitable for her and her family to be traditional. As soon as Mrs. Hutchinson's personal welfare is put into place, Jackson gains a vehicle to vocalize the barbaric nature of the ritual. Tessie tries to keep within the boundaries of the ritual in hopes of reducing risk to her firm and in being chosen decides to differentiate in hopes of reaping the benefits of nonconformity. Ultimately though, non-conformity in "The Lottery's" fundamentalist society is not tolerated and Tessie is stoned to consummate the ritual. She finally pleads that "It isn't fair, it isn't right" (Jackson 141) as Jackson attacks the reader with imagery of Tessie's friends and family stoning her.

The village takes the form of a fundamentalist state through the rejection of modernity and mirrors the same tension between religion and progressiveness in modern society. "The Lottery's" society rejects secularism and modernism and begins to show extremist tendencies through development of a "mind-set immune to dialogue or alternatives, a denial of relativism" (Nagata 483). The village mirrors Islamic society closer than any western counterpart. Western society divides religion and state more than their Islamic counterpart and has allowed church to have less influence on daily life (Baker 6-7). By looking at the village law as directly tied to religious scripture, the "hegemony of the (written) divine word is inherently antirational, anti-enlightenment, and leads inevitably to categorical or formulaic thinking "Repudiating modernism."" (Nagata 483). Mirroring some Islamic nation-states where Sharia law is the only acceptable litany, the ritual becomes the only acceptable practice within the village. Studying the story takes on different meaning between western and eastern interpretation. Where the bible is not the defining law of the west, some Islamic states hold "the infallibility or sacredness of the Qur'an [lying] in the mode and medium of its transmission as the unaltered, inimitable Word of God made text, revealed to the

Prophet in one place at one time and unyielding to historical evidence of alternate versions of Qu'ranic texts"(Nagata 484). The ritual takes this infallibility to stifle any modernization or reform. Like its modern counterpart, the village's youth become the driving force behind the reforms made in other villages. Younger, more educated individuals have also become the driving force behind reforms in some Islamic states with apparent examples in the 2011 uprisings within North African states like Libya, Egypt, and Tunisia. These uprisings highlight "the constant tension, in an interconnected, transparent world, between ideas of a universalistic science as diffused through Western languages and education, on the one hand and culturally appropriate (non-Western) alternatives"(Nagata 485). Jackson keeps this tie between the village's new cultural identity that springs from Fundamentalist strains and develops into the politics of identity itself. The same product arises from indigenous cultures "as representatives of a new genre of movements in quest of more ultimate fundamentals of culture and identity" (Nagata 485). They all contain their "own fundamentals or sacred canons, whether land (for Jewish Gush Emunim defenders of the West Bank) or the unbreachable genealogical ideal of Ultra-Orthodox Jews in their resistance to conversion" (Nagata 485). Jackson takes ideas of cultural identity, boils it down to its fundamentalist aspects, and then extracts the most extreme and inhuman aspects to elicit shock from the reader.

Jackson's exploration of fundamentalist structures in "The Lottery" works to portray the larger scope of the tension between progressiveness and reform while being cast against the pillars of tradition. Both sides of this argument react to each other, moving to extremes. Once the extremist tendencies develop, the structures delve into themselves and begin to show dangerous tendencies that could take away from the human condition. Jackson's theme speaks to human rights and makes the reader question the relevance of such stratification in modern culture.

Resources

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Nagata, Judith. "Beyond Theology: Toward an Anthropology of "Fundamentalism." *American Anthropologist*, New Series, Vol. 103, No. 2 (Jun., 2001), pp. 481-498.

Ronald Inglehart and Wayne E. Baker. "Modernization, Cultural Change, and the Persistence of Traditional Values." *American Sociological Review*, Vol. 65, No. 1, Looking Forward, Looking Back: Continuity and Change at the Turn of the Millenium (Feb., 2000), pp. 19-51.

Vernon L. Allen and John M. Levine. "Social Support, Dissent and Conformity." *Sociometry*, Vol. 31, No. 2 (Jun., 1968), pp. 138-149.

Characteristics of a Good Middle Grades Teacher

Author: Katrina Vader

Faculty Mentors: Dr. Reidel and Dr. Williams-Johnson

ABSTRACT

This research project is a mixed methods study with the intent to discover the characteristics that make up a good middle grades teacher. This study attempts to fill the gap found in the literature of past studies and serve as a tool for teachers looking for jobs or hoping to improve their characteristics in the classroom. The data collected from middle grades teachers, students, and parents was analyzed to determine which type of characteristic they deem is most important in a teacher: personal, pedagogical, or professional.

Introduction:

Aristotle once said that, "Those who educate children well are more to be honored than they who produce them; for these only gave them life, those the art of living well" ("Aristotle Quotes", 2001). Although many people might have agreed with Aristotle in his time, this way of thinking is hard to come by in this day and age. Especially now that many teachers find themselves losing their jobs and student teachers cannot find employment, they have begun to wonder what most people believe are the characteristics that make up a good middle grades teacher. What characteristics make up the kind of teacher who can demand the respect of Aristotle's time?

There are various workshops and conferences that middle grades teachers can attend each year to learn from experienced speakers, advance their skills, and find innovative professional development. As teachers, the need for constant improvement comes from wanting to be the best that they can be for the students and having the ability to share knowledge of the world along with the necessary educational material. Because middle grades teachers want to give as much as they can to their students, they need to develop certain characteristics and traits that will allow them to help their students. Along with the pressure to be a good teacher, there is the added external pressure of the high stakes exams as they are trying to exhibit good teaching. The amount of time and the style of teaching go hand-in-hand with making sure that students succeed on high stakes exams are often at odds with what one would consider good teaching. Teachers may not always get to teach the material or do activities that we believe are important, because our main focus is making sure that our students pass the test. Middle grades teachers must have the characteristics needed to balance teaching to the test with achieving the broader goal of education, which is cultivating critical thinking, civic responsibility and social mobility. The different approaches to teaching can impact perceptions of the characteristics required of good teachers.

Many schools have posted on their website the qualities that they believe their teachers should reflect in their teaching and live up to every day. For example, a small, Catholic school in Atlanta, GA posted this statement on its website: "Teachers, administrators, and support staff should create a safe and nurturing educational environment that challenges each child to achieve his/her potential" ("IHM Beliefs", 2002). This belief is shared by many educators and one that is thought to be the basis of education itself as an institution. How can this statement be made into a set of characteristics and unique qualities that future and experienced middle grades teachers can strive for? The only answer to that question would be to ask. Ask students, who are struggling with the school workload given to them by their teachers, parents who deal with the bureaucracy of education on a regular basis, and middle grades teachers who are facing this reality every day they step into their classroom. Ask the questions that may seem simple and unimportant to others, but could have an enormous impact on the lives of many middle grades teachers in the future. Ask the questions that, when answered, may change teachers' way of thinking and the role that they play in the lives of their students.

Purpose Statement:

The purpose of this study is to explore personal, pedagogical, and professional teacher characteristics and the differences in how students, parents, and teachers view these characteristics. This was achieved through surveys and focus group interviews with students, parents, and experienced teachers of different genders, ages, backgrounds, races, ethnicities, social economic statuses, etc. I explored the many characteristics of a good middle grades teacher from the different perspectives of students who are learning every day in the classroom, parents who are concerned about their student's performance, as well as teachers and principals on the lookout for new teachers. This was a mixed methods study. Some of the data is quantitative because of the rather large number of surveys administered and collected, but there is also substantive qualitative data because of the type of open-ended questions presented in the surveys and in the focus group interviews. Gathering all of the evidence together, I analyzed the similarities, differences, patterns, and anomalies in the connection between the idea of a good middle grades teacher and those characteristics that make them great.

Research Questions:

1. What set of characteristics make up a good middle grades teacher?
2. What are the similarities and differences between what students, parents, and teachers think are the characteristics that make up a good middle grades teacher?

Review of Literature

Using studies found through online searches and textbooks, issues concerning teacher characteristics, effective teaching methods, and student views of teachers began to appear. One obstacle that I stumbled across was the fact that there were not many studies done on this subject where the researchers explained their purpose, method, and findings, and many studies did not focus on middle grades teachers. Another problem I discovered was the realization that many articles that discussed the characteristics of a good teacher were very short and had little empirical evidence supporting their claims. After searching through a variety of studies relevant to the subject at hand, I got a better understanding of what some other researchers believe are the characteristics that make up a good teacher.

These studies encompass all different types of characteristics, including personal, pedagogical, and professional characteristics. Personal characteristics include being humorous, humble, trust-worthy, and considerate. Pedagogical characteristics are about having the ability to give the students an education based on a combined effort from both the students and teacher. Professional characteristics include punctuality, responsibility, determination, and reliability. Together, these characteristics can make or break a teacher and how effective they are with their students. The following studies shed some light on the importance of these various characteristics.

Açıkgöz conducted a study to examine if teachers who put more emphasis on "establishing and maintaining effective learning environments" would have more success with students than teachers who emphasized being in command as the authority figure in the classroom. He found that depending on the age and gender of the students participating in the surveys, their opinions changed as to which characteristics were more important to create a good teacher. He used data collection packets that contained basic student information provided by the school and collected teacher questionnaires that were filled out by the students in the four chosen schools. Some of the questions on the survey were open-ended, while others required students to select a specific answer. The results of the questionnaires were analyzed mathematically, displayed in various charts, and described in a way that was very difficult to understand. These same results were put into the three subgroups of personal, pedagogical, and professional, which made it easier to understand. This allowed for readers to figure out if some of the results were skewed based on any of these three issues. The open-ended questions were displayed in another set of charts, but these charts

were very clear and easy to comprehend. It was nice to see a sample of answers for each question and what grade level those students were in for each answer. The varied answers, the good and bad opinions of teachers from the student perspective, were well organized and straightforward to follow. Açıkgöz concluded that it is not enough for a teacher to be outfitted with pedagogical and professional characteristics because it is necessary to have a positive and welcoming learning environment for the students. Personal characteristics are just as important, if not more important, to the students and their success in the classroom. This study suggests that teaching style, school environment, and personal factors greatly influence students and their attitude toward learning (Açıkgöz, 2005).

The study of McDermott & Rothenberg explores the characteristics of great teachers in a low-income urban setting with three focus groups that consist of seven parents, six middle school girls, and four elementary teachers. The consensus across all three groups of participants was that the most important characteristic of a good teacher was having peaceful and trusting relationships with students and families (McDermott & Rothenberg, 2000). Although it was good to get the opinions from three separate focus groups in this urban, high poverty school, it would have been interesting to see what would have happened if all three focus groups had met together and discussed issues that affect them all. I liked how a different researcher took charge of each focus group, but all of them took notes. This was very important, because notes are different from person to person and it was imperative to have the ability to compare the same person's notes from each group in order to recognize patterns within the three groups. However, the researchers were not able to redirect the parents' focus to something other than negativity towards teachers. There is so much more that they could have discussed instead of continuing on the same issue that cannot be solved just by talking amongst themselves. I really liked that the researchers finally got the parents to agree that good communication skills, respect for their children, strict, but kind teaching styles, and a good understanding of their children are among some of the characteristics that they believe make up a good teacher. The teacher focus group discussed the importance of having lessons that are relevant to the students' lives in accordance to what is important for them to learn, while at the same time having support from the parents. The student focus group agreed that good teachers make personal connections with them, do not yell, have a sense of humor, and have a variety of learning activities instead of just teaching from the book. The study spends a lot more time talking about what happened in the parent focus group than the teacher and student focus groups. Overall, the study was carried out well, supports the importance of personal characteristics, and triangulating the data definitely gave the researchers a chance to see the connections between the three groups that are affected the most by the characteristics and beliefs of teachers.

Bias is never so much apparent than in Miller's study. The reason behind the study was not to better understand what characteristics make up a good teacher, but to lecture others on what the author believes is right in the "eyes of the Lord." The study determines that teachers should be considerate, kind, loving, mature, tolerant, patient, and "demonstrate the Gifts of the Spirit," which is in conjunction with the fact that the author did this study after an altercation with a friend and is fighting for his side of the argument. The seven characteristics that are listed only relate to the personal characteristics needed to be a good teacher, and are stated in a way as if speaking of a relationship between people of the same age rather than describing the relationship between a teacher and his/her younger students. Some of the religious terms and phrases can definitely be applied to teaching, because it is important to respect one another's opinions, cultures, and religions. According to Miller, one characteristic of being a good teacher is having that respect for every student that walks into the classroom, and this study puts a great deal of emphasis on that (Miller, 2006). Overall, the study does little to help shed some light on the other characteristics, such as pedagogical and professional characteristics, that will help students succeed in the learning environment.

Walker investigates the personal, pedagogical, and professional characteristics that make a teacher good and effective in the classroom, finally determining a minimum set of twelve characteristics. These characteristics include being prepared, creative, fair, approachable, welcoming, humorous, respectful, for-

giving, and compassionate, having a positive attitude and high expectations, and being able to admit mistakes. This study shows that personal, pedagogical, and professional characteristics are equally important as teachers. The author discusses in length the background of the study, making it clear that the participants of the study, Education majors, are very diverse in age, ethnicity, and life experiences, and that the results span over a period of fifteen years. It is good that the study includes examples of what these various Early Childhood and Middle Grades Education majors believe are characteristics of a good teacher. The study brings to light that many students stated characteristics based on teachers that they have liked in the past, and not based on their qualifications in terms of their level of education (Walker, 2010). I think it is interesting that the twelve traits and characteristics that the author has deemed essential to be a good teacher are derived from essays that his students have written over the years, and not one characteristic deals with academic ability. They all have to do with the teacher's relationship with the students and how it makes them an effective teacher. The only problem with this study is that the assignment the researcher gives his students is to describe their most effective teacher and why that teacher had such an impact on their lives. Using this essay assignment as the only method to gather evidence skews the results a little, because there might be other characteristics of good teachers that are not discussed. This is simply because the most memorable teacher is not always the best teacher.

The study by Thompson, Greer, & Greer looks at college students' opinions of what makes a good teacher based on a teacher from who they learned. Like Walker's study, the twelve characteristics attributed to good teachers were determined by asking about the students' most influential teacher. These characteristics include fairness, positive attitude, preparedness, personal touch, sense of humor, creativity, willingness to admit mistakes, forgiveness, respect, high expectations, compassion, and sense of belonging (Thompson, J. Greer, & B. Greer, 2004). Unlike Walker's study, this study went into detail about each of the twelve characteristics of a good teacher. This display of information gave readers a better understanding of what these characteristics are, how they considerably impact students' lives, and how they offer comfort in the learning environment. The study did a good job of explaining the results of the research process, but did not fully explain the process step by step. In conclusion, the study argued that every teaching professional needs to be aware of these twelve characteristics of a good teacher in order to strive to be the best educator possible.

The study of Wayne & Youngs examines the relationship between how well a student performs in the classroom and the characteristics of the teacher. This could impact how principals and administrators search for new teachers, because the state requirements of degrees and test scores are not the only factors in the equation. When discussing the synthesis of results in the study, more time is spent talking about which methods will not work and why, instead of the method that actually works and getting straight to the point. At one point in the study, it is pointed out that the study itself is subject to "publication bias" and once again talks about issues that are not necessarily pertinent to the study. It goes on to list a variety of characteristics of a good teacher with supporting evidence from other studies provided underneath each characteristic (Wayne & Youngs, 2003). While this definitely provides enough evidence so that there is no dispute of its legitimacy, this is something that could have been done in a literature review at the beginning of the study. That way, the author could just reference back to the study when needed as a piece of important evidence. The majority of the study is organized in this way and makes it very difficult to follow the actual evidence that was gathered buried beneath the facts of multiple studies.

The 2005 Metropolitan State University Student Voices study conducted by the Spring Faculty Conference is different than the rest of the studies previously discussed. There is almost no background to the study and it is more of a transcript of a discussion group between three college students than an actual study. It would be good to have more information pertaining to how this study came about, how it was executed, and the conclusions that the researchers came to at the end of the study. The actual study itself was very interesting and it is the best-supported data that has been presented in any of these studies. Asking three students the same question and distinguishing between the various answers by using different fonts makes everything very organized and easy to follow for the reader. All three of the students had

different ways of approaching the questions and each gave an answer that related back to the topic at hand. Their answers about the characteristics of a good teacher definitely corresponded with what was discussed in some of the other studies, but this is one of the only studies that directly shows the entire answer given by the students. This study did a good job of listening to the students' opinions, and not altering them to fit the intended outcome, but instead let the students voice their thoughts and see how well they coincided with the projected target for this study (Metropolitan State University, 2005).

Overall there is little evidence to support many of these studies, some of the collected data was very subjective, and there were a variety of methods used such as surveys, focus groups, and papers. Common themes among the different studies are pedagogical relationships between teachers and parents and a set of twelve characteristics that encompass what a good middle grades teacher needs in order to be successful. The lack of studies done on this particular topic and the vast difference in how the data was collected leaves a gap in the research that needs to be filled in order to truly understand the characteristics of a good middle grades teacher.

Methodology

Because the purpose of this study is to examine different constituencies' perspectives and beliefs about the characteristics of a good middle grades teacher, it definitely hits close to home for many student teachers as it gets closer to graduation day. This study is a mixed-methods study because of its qualitative and quantitative aspects of gathering data from the study participants. The surveys brought in the quantitative information because of the multitude of responses that were gathered by one quick set of questions. On the other hand, the focus group discussions brought in the valuable qualitative information because of the significance of the answers that helped explain some of the quantitative responses. This mix methods approach was chosen because many of the other existing studies either rely solely on survey data or on a small number of participants.

Setting:

This study was conducted in a middle school in the metro Atlanta region of Georgia. The area around metropolitan Atlanta is heavily populated, has many growing schools, and more teachers are moving there to find a job so studying a school in that particular area was very beneficial. All of the participants had various roles in the learning environment, which allowed them to have different perspectives on issues that affect an entire school community. The school under study was a private Christian school that has nine grade levels, ranging from Kindergarten to eighth grade, and has a total of five hundred students. This school was chosen because of its size and the accessibility to the students, parents, and teachers of the school. The size is important because collecting too much data would take away from the study and too little data would not be enough for a complete study. This school was just the right size for the study and the participants were open and willing to give their input.

Participants:

In this study, there were people varying in age, gender, and experience in a single school system. So while the setting of this study was a fixed, central location, the participants varied greatly. The participants of this study included middle school students, parents, and teachers from the same middle school, Omega Private Middle School (OPMS). The school is home to five hundred students from Kindergarten to eighth grade under the supervision of 57 faculty and staff. The teachers of OPMS have an average of 13 years teaching experience and 70 percent of the teachers hold advanced degrees. In grades six through eight, there are approximately 30 students in each of the six classes for a total of 180 middle grades students. 29% of the students in the entire school represent the following: 14% Hispanic, 6% African American, 5% Asian, and 4% multi-racial. In the year 2009-10, almost 17% of the student body received tuition assistance.

For this study, twelve teachers, sixty sets of parents, and sixty eighth graders were invited to participate. The gender, race, and ages of the participants widely ranged depending on which role they were a part of. 8 teachers, 13 parents, and 11 students returned a survey. The teachers consisted of 1 male, 7 females, 1 Hispanic, and 7 Caucasians, ranging in age from 26 to 58. The parents were all female, 6 Hispanics, 1 Asian, 6 Caucasians, and the ages ranged from 41 to 51. The students consisted of 5 males, 6 females, 5 Hispanics, 5 Caucasians, 1 Asian, and ages of 13 and 14.

There were a variety of ethnicities, races, and backgrounds so that the perspectives of the study would significantly vary. There were two students, four parents, and five teachers in three, separate focus groups and the invited participants were determined based on who teaches the eighth graders and what students and parents were willing to participate in the study. All of the teachers except one were female, all of them were Caucasian, and their ages were 26, 26, 42, 50, and 57. The focus group of parents included all females, all Hispanics, and ages of 41, 43, 45, and 49. The small group of students included two females, one Asian, one Hispanic, and ages of 13 and 14.

After reviewing the many other studies that had been conducted to find the characteristics of a good teacher, it was apparent that this study would study a group of people that had not yet been accounted for. Many studies had been done at the university level, with the participants reflecting on previous teachers. This study is relevant to today's time because the participants had a daily involvement with the middle school environment. Also, many studies dealt with data that included more than one school. This study focused on one school rather than multiple schools, because the control of one location took away other environmental factors when getting the different perspectives of students, parents, and teachers. The intent of this study was to bridge the gap between other studies on the same topic but conducted in different ways.

Data Collection:

The data from this study was collected in two different ways. To get a full understanding of the characteristics of a good middle school teacher, the surveys were administered to all sixty eighth graders, their parents, and the teachers from OPMS who teach those students. Eighth graders were specifically chosen from the entire middle school, because they had gone through the middle school experience and had a lot to offer in terms of the quality of their answers. This group of survey participants consisted of a mix of genders, races, and ages, so the surveys listed their race, gender, age, and whether they were a student, parent, or teacher in order to keep them organized. The second form of data collection for this study was three focus groups with the number of participants based on their role in the school. With students, parents, and teachers in separate focus groups, or discussion groups, data could be collected in a way that expressed their opinions on the characteristics of a good middle grades teacher. The focus groups consisted of two students, four parents, and five teachers varying in gender, race, and age. The parents and teachers in the focus groups also had assorted degrees of experience with the education system. The focus groups provided a more in-depth perspective of the characteristics of a good middle grades teacher that the surveys were not able to do.

Data Analysis:

The collected data were then put into different forms that were appropriate for manipulation and analysis. The surveys were divided by students, parents, and teachers so that the information could be analyzed based on the three distinct perspectives. The focus group tape recordings were transcribed and any additional notes taken during the discussion were typed. The data was analyzed, organized, and presented based on personal, pedagogical, and professional characteristics. The results were reported based on the research questions and in a narrative format based on what was learned about the different perspectives of students, parents, and teachers based on personal, pedagogical, and professional characteristics.

The surveys and focus group interviews were completed during the Spring of 2012 and data analysis was completed during the Fall of 2012.

Findings:

The data collected from the surveys displayed a wide variety of opinions about what makes a good middle grades teacher from the perspective of students, parents, and teachers. The participants from the same population – students, parents, and teachers – often agreed with one another, but the opinions between the three different populations did not always align. Using a Likert scale to determine whether participants agreed or disagreed with given statements helped narrow down the kind of characteristics that were deemed more important in their eyes. The following chart shows the percentage of teachers, students, and parents that agreed with the nine statements in the survey.

Statement Agreement (%)

Question	Statement	Teachers	Stu-	Parents
1 (Prof)	Teachers who have Master's Degrees or Ph.D.'s are better qualified to teach middle grades students than those without them.	25%	55%	31%
2 (Ped)	Knowing the content/subject is the most important aspect of being a good middle grades teacher.	50%	100%	69%
3 (Prof)	Responsibility, determination, and reliability are the key to being a good middle grades teacher.	75%	100%	92%
4 (Per)	Creating peaceful and trusting relationships with students is more important than punctuality and preparedness in the classroom.	63%	64%	31%
5 (Non Per)	Respect for students and a positive attitude are not the most important characteristics of a good middle grades teacher.	0%	0%	23%
6 (Per)	Creativity and a sense of humor are essential to being a good middle grades teacher.	88%	82%	85%
7 (Ped)	Making connections with students to help them learn is not as important as the content/subject that is taught in a middle grades classroom that is taught.	0%	0%	8%
8 (Non Ped)	The teacher should be the only one teaching in classroom.	0%	18%	8%
9 (Ped)	Allowing students and teachers to work together in the classroom is essential practice for a good middle grades teacher.	88%	73%	100%

While high levels of agreement for Questions #4 and #6 showed that personal characteristics are deemed extremely important for a good middle grades teacher, survey participants also ranked pedagogical and professional characteristics as being relatively important. The majority of the statements that dealt with pedagogical characteristics had a high percentage of agreement from all three groups of participants, while the percentage of people who agreed with the statements of personal characteristics tended to be higher for teachers than for students and parents. Many of the participants were willing to agree that pedagogical relationships between the teachers and students are extremely important in the classroom, but that professional characteristics give more of a background and basis to creating that shared type of learning environment. Teachers need to be able to have the characteristics of preparedness, responsibility, punctuality, etc. in order to be successful in the classroom which therefore affects the pedagogical charac-

teristics. The participants used the survey as a way to express that they believe the different classifications of characteristics can affect each other and that it is not possible to have one without the other. One interesting thing is that Question #1 indicates that a higher degree shows a teacher is more qualified than a teacher without one, but the participants of the survey seem to imply that all other characteristics are more valuable than a higher degree.

The open ended questions of the surveys and the focus group transcripts were a little more telling of what the three different groups think about the characteristics of a good middle grades teacher. The top answer for personal characteristics was humor (teachers and students) and caring or compassion (parents). The most common answer about pedagogical characteristics was content knowledge (teachers, students, and parents) and the top professional characteristic was professional and respectful with students, teachers, and parents (teachers), punctuality (students), and organization and preparedness (parents).

The focus group of the teachers showed that personal and pedagogical characteristics are the most important for a teacher to have. Responses such as passion, content knowledge, patience, fairness, dedication, and being relatable are all extremely vital to being a good middle grades teacher according to the teachers at OPMS. The teachers went on to explain that "you have to be able to relate to those kids and where they live" and "show them that you care about them, because if you do that, they'll do anything for you." According to the middle school teachers' statements, they seem to heavily rely on personal characteristics and even state in the focus group that they believe the personal set of characteristics is the most important.

The focus group of the students showed that pedagogical characteristics are the most important for a teacher to have. Some of the characteristics that they mentioned were being prepared, knowing what they are doing, respect, passion, sense of humor, and cooperation between teachers, students, and parents. The students in the focus group mentioned that if the "teachers, parents, and kids can't work together then the kids don't really want to do the stuff" and that teachers should "not judge you if you want to go talk to them about something other than what they teach." Students believe that this give-and-take relationship between teachers and parents is most beneficial in fostering a learning environment in the classroom.

The focus group of the parents showed that pedagogical characteristics are the most important for a teacher to have. They stated that some of these characteristics include actively engaging students, varying the teaching styles, and content knowledge. The parents really emphasized the need for teachers to "connect and understand the kids" and "set high expectations." They also said that they were surprised by some of the responses that the students gave in the surveys and focus group discussions. One parent even said that the students "were much more mature than I was expecting." Parents had various comments about the difference between their answers and the answers of the teachers and students, such as humor. Both teachers and students listed humor as a very important characteristic while the parents did not find it to be as important. One can consider that this difference is due to the fact that parents are not in the classroom on a regular basis and view education in a different light than the other two groups.

When each set of participants was asked if they believe different groups have different views of characteristics that make a good middle grades teacher, they all seemed to agree that there are differences. Teachers claim that "experience changes everything. If a student has a poor experience, they're going to pick whatever it is that teacher did that they have a problem with and they're going to pick the opposite of that or the opposite trait of whatever they think they have been wronged with to say that's the most important thing." Students say that "if your needs are different from somebody else's, then your definition of a good teacher is probably going to be different from the person next to you." Parents stated that each group has different views of the characteristics of a good Middle Grades teacher, "even amongst students." While there were overwhelming numbers of participants in each group that thought the same way in terms of what characteristics were more important for a teacher to have, there were still some outliers in

which students, teachers, and parents disagreed with other participants in their group. On some of the survey questions and answers during the focus groups there were some ambiguity in what these participants thought as a group.

Implications and Conclusions:

This study on the characteristics of a good middle grades teacher has increased the amount of data available for researchers on this particular subject. Many of the previous studies such as Thompson, J. Greer, & B. Greer (2004) were done using college students to describe their middle grades teachers and the type of characteristics that these students found to be important to making their experience enjoyable and beneficial. The characteristics found in this study include fairness, positive attitude, preparedness, personal touch, sense of humor, creativity, a willingness to admit mistakes, forgiveness, respect, high expectations, compassion, and sense of belonging. Walker (2010) also investigated the personal, pedagogical, and professional characteristics that make a teacher good and effective in the classroom but determined that there was a minimum set of twelve characteristics. These characteristics include being prepared, creative, fair, approachable, welcoming, humorous, respectful, forgiving, and compassionate, having a positive attitude and high expectations, and being able to admit mistakes.

The characteristics of both studies are classified as personal, which means that students looking back on their experiences believe that personal characteristics are more important. The findings differ from what these researchers discovered because students leaned more towards pedagogical characteristics. One factor that may have contributed to this difference is that, by using eighth graders, teachers, and parents at the end of the year, this researcher was able to explore characteristics that were important at this present moment instead of years later.

The study of McDermott & Rothenberg (2000) used focus groups in order to gather information from the various groups in the school community and determined that having peaceful and trusting relationships with students and families was the most important thing. This does not differ from my study in that these characteristics of trust and good relationships are pedagogical and were considered the most important aside from content knowledge. Another study, by Açıkgöz (2005), used charts for analyzing the personal, pedagogical, and professional characteristics discovered during the study and determined that it is not enough for a teacher to be outfitted with pedagogical and professional characteristics, because it is necessary to have a positive and welcoming learning environment for the students. My study found that many of the participants agreed with this statement, but the pedagogical characteristics were often times considered to be more important.

All of these studies paved the way in making my study the bridge between all of them in terms of collecting quantitative and qualitative data through surveys, open-ended questions, and focus groups. The studies also allowed me to expand on previously known knowledge, which will hopefully give other researchers the opportunity to expand in terms of broadening the scope.

The findings from this study should indicate to educators that the various groups in the education community such as students, teachers, and parents all view the role of teachers as something different. When considering what to work on and what goals to strive towards, educators should reflect on what characteristics they already possess and what group or groups on which they should be basing their decisions. Knowing that teachers lean towards the personal characteristics while students and parents lean towards pedagogical characteristics should give teachers a look into what is valued in the classroom. While the personal characteristics help educators get through all of their tasks and responsibilities, the pedagogical characteristics are what really matter in order to give students a good education that meets their needs.

For future research on the characteristics of a good middle grades teacher, I would like to expand the parameters of the participants such as the number of schools, teachers, students, and parents involved

in the surveys and focus groups. It would also be beneficial to go back to the original plan of the study, which was to have three separate focus groups and have a combined focus group that included all roles of participants. This would allow students, teachers, and parents to discuss amongst themselves the characteristics of a good middle grades teacher and get a take on the various perspectives that come from each group present. These two modifications to the study would allow for a broader scope and bigger pool for data as well as provide a more in-depth look at what makes up a good middle grades teacher.

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Chinese Government's Special Economic Policy: A Case Study of Free Market in Zhejiang Province

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Introduction

Chinese economic growth has always been a mystery for people. Leaders of states, as well as researchers, are in search of the economic miracle the Chinese economy is trying to build within its strict communist regime. According to Heidi Vernon-Wortzel and Lawrence Wortzel, free markets and entrepreneurship have reshaped the structure of the economy and improved the life of millions of people since 1976 (Vernon-Wortzel & Wortzel, 1987). Is it really the case? Free markets, in some aspects, have made a positive impact on life standards of some people, but it also has some negative shortcomings on local areas, especially in the administration and agricultural industry. In order to examine this effect, my research will look at the case of the Zhejiang Province in South East China and examine how the Chinese government supports its entrepreneurship and how flexible the Chinese government is in order to adjust its policy to make room for economic changes in its strict communist regime.

Reform Policy

First, China begins its entrepreneurship and free market with its reform policy that was introduced in the 1970's. Starting with the new policy of economics in 1978, Dang Xiaoping imposed a new economic policy in China: State Capitalism in China with Special Economic Zones (SEZ). Within the Special Economic Zones, the economy is developed in a capitalist way, as Dang Xiaoping captured his ideas in a statement about the state's economy "It doesn't matter whether the cat is black or white as long as it catches mice" (Caryl, 2011). This is the special feature that Dang Xiaoping implies when he named the policy "Special Economic Zone."

Continued with this policy, the Chinese government today has a "one eye shut, one eye open" policy, in which the government will loosen the law and intentionally ignore some of the communist laws to encourage small entrepreneurs to keep on producing goods and services. Ideally, people in a communist state are not allowed to trade goods and services due to the fear of inequality. People in communist states produce goods and services according to the control and need of the government and receive salaries, as well as other privileges directed by the government. However, this does not exist anymore. The economic reform in 1978 and the Chinese policy of nowadays, "One eye shut, one eye open," has changed dramatically, giving China the capacity to be the second largest economy of the world, ranking directly under the United States.

Many studies have been conducted on China's reform policy, specifically whether or not everyone is benefitting from free markets and private entrepreneurship. Has the quality of life improved with more revenue being created? From micro economic viewpoint, Vernon-Wortzel and Lawrence Wortzel in their article "The Emergence of Free Market Retailing in the People's Republic of China: Promises and Consequences" introduces the idea that free markets and entrepreneurship have improved the relations between small entrepreneurs (Vernon-Wortzel et. al, 1987). They create more equities and efficiency between entrepreneurs' businesses. Generally, the reform policy makes individuals wealthier.

Although these benefits are obvious, some of the shortcomings of China's entrepreneurship are also mentioned. On microeconomic level, author Vernon-Wortzel believes that "Equity can be affected when income distributions change as they have now with the introduction of free enterprise." An example that the author gives is about buying televisions in Hong Kong:

Since incomes were relatively equal, everyone had relatively equal access to a set. Now any newly wealthy entrepreneur can manage to acquire a set imported through Hong Long, regardless of his (or her) official entitlement, because he can pay the premium that the availability of the set commands. As long as

the state stores are able to get merchandise, the consumer can buy at a lower price; but if not, consumers will pay more.

Not only do free markets introduce inequity for customers in a merchandising system, but they also bring the mix of quality in goods and services. Since a free market does have a variety of goods with diversity in prices, the consumers who have a less modest budget might have to go with lower quality goods and services.

Coming back to a macroeconomic level viewpoint, the reform has left some problems in the wealth distribution structure. Wong and Sun Sheng Han in their article, "Wither China's Market Economy? The Case of Lijin Zhen" has stated that, "although reform and openness led to commendable achievements at the national, regional, and provincial levels, little is known about how these changes have affected economic and urban patterns at the county and town levels" (Wong & Sun Sheng Han, 1998). Truly, on a macro level, there are some problems between economy structures and divisions. According to this article, there are basically three forms of policies: rural reform policy, urban reform policy and openness policy, all of which are introduced in 1978 by Dang Xiaoping.

The rural reform policy replaced the communist system and an inefficient command-production system, resulting in the large influx of agricultural workers to Chinese cities (Wong et. al, 1998). The rural reform cares very little about the agricultural industry. It reduces the agricultural lands, agricultural industry, and brings more young people from rural areas that cannot find jobs into the cities. The second policy, which is the urban reform, is an extended policy from rural reform. Through a macro level perspective, it lacks self-determination and it has poor cooperation among administrations (Wong et. al, 1998). According to Wong, "It calls for liberalization of government control and decentralization of administrative powers" (Wong et. al, 1998). However, there are not many smooth transitions between local governments and government central departments as the local governments develop freely, but the central government departments stick to the communist regime regulations (Wong et. al, 1998). Finally, the openness policy introduces new technology and management skill for people to catch up with the fast growing world. It helps to attract foreign investment and exchange goods and services. However, unless there is help from the Chinese government, the regulation and administration works are still very complicating and confusing for entrepreneurs.

Regarding all the shortcomings of the reform policy, my research is looking at the case of the Zhejiang Province in order to answer the question, do free markets and entrepreneurship, supported by the Chinese government flexible policies, care enough about agricultural industry in rural areas? Do China's free markets and entrepreneurship lack self-determination and a clear policy for foreigners to invest in China?

Zhejiang Province



Figure 1: Zhejiang province is in red color and the star is Beijing. Zhejiang Province. (2009). Chinese Business World. Retrieved from <http://www.cbw.com/general/gintro/zhejiang.html>

A harmonious combination of capitalism and communism exists in Zhejiang, a wealthy province in the east coast of China. This combination helps to develop and promote freedom in the economy. Considered to be one of the perfect models in China, Zhejiang province is a capitalist island in a communist state. According to *The China Times*, Zhejiang grows speedily, consistently ranking as one of five provinces which has a GDP of more than 2 trillion a year. Behind the success story is a special policy from the government called "one eye shut, one eye open" that tightens or loosens the control of the government towards private entrepreneurs. In the case of Zhejiang province, the Chinese government applied this

policy to encourage farmers to be their own master, enlarge private sectors into international markets and even loosen the law to help private entrepreneurs access better loans from the Zhejiang banking system. Nevertheless, due to the lack of proper law, there is a thin line between doing business legally and illegally. As a consequence, entrepreneurs might have to suffer if the government wants to tighten the law.

Zhejiang is a province that lies in the east coast of China. With a part of the province bordering the East China Sea, Zhejiang has plenty of resources that consist of seafood and harbors to develop its economy. Zhejiang has coastline of 2,200 kilometer, 18 cities, 57 counties and its capital city is Hangzhou. Its major cities are Hangzhou, Ningbo, Wenzhou, Shaoxing, Jinhua, Jiaxing, and Huzhou ("Zhejiang Province", 2009).

Agricultural Industry

Make every farmer becomes an enterprise

First, in the agricultural sector, the Chinese government has two policies to encourage farmers: 1) to make every farmer become an entrepreneur, and 2) to encourage them use the agricultural insurance for farmers due to the dependence on weather that farmers have to endure. The purpose of these policies is to make every farmer his or her own owner. China's government has a policy of training farmers to have a great education and good skill, while protecting them with laws and insurance. The Chinese government was successful in educating farmers in Zhejiang. According to Yu and Ying in an article named "From Culture Sending to Culture Planting: The Initiatives and Experiences of Improving Farmers' Cultural Quality in Zhejiang Province," the farmers in Zhejiang are encouraged to increase their knowledge (Ying and Wu, 2009) in order to lessen the education gap between cities and rural areas, and produce more acknowledged farmers. The government practices bringing books, magazine, operas and mass media (Ying and Wu, 2009) to Zhejiang to introduce entertainment as well as education to farmers.

This policy does not only decrease the gap between the countryside and cities. Economically, this policy actually introduces new economic reforms. Zhejiang is a big province with population of 54,426,900 people ("Zhejiang Province", 2009) and around 12 million people are farmers. It has a tradition of making a living by raising cattle. In fact, farmers play an important role in the province's economy. Therefore, the wealthier farmers become, the more they will contribute to the economy. If the farmers are well educated and have a knowledgeable background about education and agriculture, then farmers have a better chance of making more profits through farming. Knowing that this policy will make a big difference, the Chinese government has tried in enhancing Zhejiang farmers' education and encouraging them to keep up with the latest news, books, mass media, and television shows in order to keep up with the changing world.

This policy seems to be long, but the effects are tremendous. Well-rounded, educated farmers will know how to calculate the prices of goods and services and they will know to choose the plants that will produce the most profits. Also they will learn new techniques in agriculture and try to apply new methods. Well-trained farmers will understand the law and basis of an economic process; therefore they can protect their own business while being flexible to the government policy.

Agricultural Insurance for Farmers

The Chinese government encourages farmers to be their own entrepreneurs in all aspects, so another great policy is providing insurance for farmers. According to Yue-Hue Zhang, the farmers are able to minimize losses due to bad weather if they buy agricultural insurance (Zhang, 2011). He states that: "The agricultural insurance promoted by the government of Zhejiang is based on the principle of business insurance and is voluntarily purchased by farmers" (Zhang, 2011). Zhang points out that the insurance covers a variety of products for farmers to choose: paddy rice, greenhouse, hogs, breeding sows, watermelons, forests, chickens, ducks, geese, tangerines, freshwater aquaculture, etcetera.

This agriculture insurance project indeed impacts the lives of farmers as their productivity and sale depends heavily on the weather. The experiment was created from 2004 to 2008, and nowadays more and more farmers, especially in Zhejiang try to buy insurance to better their agriculture productivity. Giv-

en the fact that Zhejiang lies near the coast of China, there are plenty of typhoons, floods, and other consequences. Although many weaknesses exist in the first experiment, it seems that the solution is becoming clearer (Zhang, 2011). In order to protect farmers from losing goods and services, the Chinese government has attempted to bring this experiment within farmers' reach.

The Chinese government made a wise policy in enhancing the quality of life for farmers. Given the fact that Zhejiang is an agricultural province that lies on the east coast of China and has a long coastline, Zhejiang is reliant on agricultural development. However, the Chinese government is more ambitious. The economic model of Zhejiang is to industrialize and commercialize the agricultural economy. The new policy means each farmer becomes his own master, each farmer becomes his own entrepreneur, and farmers become more independent. Chinese government policies are flexible as bamboo: creating wealthy farmers that are well-rounded, and well-educated to be able to compete on free market while protecting them with insurance and laws if necessary.

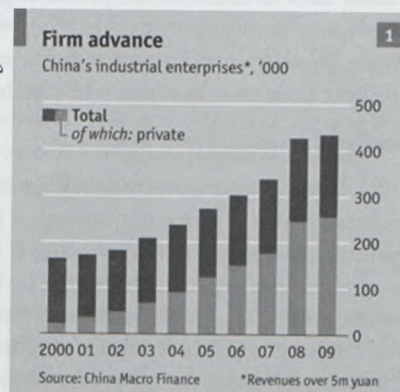
Chinese Economy Goes Global

In order to promote private entrepreneurship, the Chinese government introduces many ways for small entrepreneurs to extend their business to the global market. Recently in the article "Let a Million Flowers Bloom," it points out that more than 93% of companies in China are private and these companies employ more than 92% of workers ("Let a Million Flowers Bloom", 2011). In the article, the author writes about a family extending its business overseas. In order to make it that far, they have to go through many steps. Indeed, there are more and more people and families who go abroad to operate or open their own companies to meet the demands of the customers. If the customers like their products, they are willing to open small branches overseas to meet the demand of the customers and in turn earn more money. Currently, according to The Economist, Dubai and The Middle East are new markets for Chinese goods and services.

Bamboo Capitalism

With the rise of free markets and entrepreneurship, there is potentially a large growth for merchandisers and other small entrepreneurs to expand their market in China. In Zhejiang, Chinese government uses the policy "one eye shut, one eye open" to help the "bamboo economy" grow rapidly. According to The Economist, bamboo capitalism is growing very quickly in China (The Economist, 2011). The economy is described as "capitalism with Chinese characteristics," which means that the invisible hand of the government will know how to control the economy, when to protect the state's economy, when to make it flexible and intentionally ignore trade laws. Since China is a communist state, the Chinese government is strong in term of power with great capacity. The Chinese government can be firm when it wants to and can be flexible whenever it deems necessary. These characteristics are similar to the flexibility of a bamboo tree; it can be bent down, but it can stand up again as before. In the economic crisis, China was one of the first in the world to recover and interestingly, was not greatly impacted by the world economic crisis. Is it because of the ability to control the economy of the Chinese government? The answer is not clear. However, it is clear from the report that small private enterprises are still making great contributions domestically and internationally to the state's economy is shown in Figures 2 and 3.

Figure 2: *Let a million flowers bloom.* (2011). The Economist. Retrieved from <http://www.economist.com/node/18330120/print>



According to the graphs, the economy is largely comprised of private firms. While free market interests have grown in many sectors, the number of state owned enterprise shares came down dramatically from nearly 70% to only 30%. From 2000 to 2009, in only ten years, the private enterprise revenue



tripled. According to Eva Yi of Keywise Capital Management, "such firms account for about 75-80% of profit in Chinese industry and 90% in non-financial services. Jun Yeop Lee of Inha University, in South Korea, calculates that enterprises not majority-owned by the state contribute about 70% of GDP, assuming that they account for all agricultural output and two-thirds of services" ("Let a Million Flowers Bloom", 2011). These graphs show the great result from the tight yet flexible relation between the Chinese government and free market enterprises.

Figure 3: The receding state: China's state-owned enterprises' share of industrial. *Let a million flowers bloom*. (2011). The Economist. Retrieved from <http://www.economist.com/node/18330120>

Banking in Zhejiang-Private Lenders and Special Financial Zone

In Zhejiang, due to the economic crisis, there are so many farmers and small enterprises that cannot access money from the bank as the state controls more than 90% of the banking system in China. Nevertheless, the new secret of banking in Zhejiang is revealed in the article, "When One Credit Door Closes, Another Opens" (Cary, 2012). The Chinese government tries to tighten laws by restricting farmers and private enterprises from borrowing money in order to protect banks from bankruptcy. Most of the people who want to borrow money are not fully capable of paying back the money in a confined time frame. Wenzhou, one of the most developed cities in Zhejiang suffered a great deal due to the fact that there were many small enterprises that could not pay back their loans; hence, many went bankrupt.

However, Eve Cary points out that, "In response to the Wenzhou credit crisis, Chinese premier Wen Jiabao announced at a State Council executive meeting in March 2012 the creation of a new "pilot zone" or "special financial zone" in Wenzhou." (Cary, 2012). Is this something similar to the "Special Economic Zone" that Deng Xiaoping opened more than 30 years ago? According to the article, it seems similar. It recognizes a wave of bankruptcy in Wenzhou and the people who own private businesses have a hard time accessing the banking system (Cary, 2012). Also, with the tightening of the government control, it seems that people are willing to look for other sources to borrow money and to avoid bankruptcy. In order to do that, they are willing to pay high interest rates. Premier Wen Jiabao opened the new flexible "Special Financial Zone" to allow private lenders to lend people money; it is called "shadow banking" (Cary, 2012). According to Cary, it is hard to know the real price of this banking system as it varies from person to person. However, it is stated that, "Estimates range from 2 trillion Yuan (\$312 billion USD), according to the State Information Center, to 17.7 trillion Yuan (2.8 trillion USD), according to China Union Pay. Underground banks often charge sky-high interest rates for loans: an estimated 14 to 70 percent (Cary, 2012).

Normally, in a communist state like China, the government will have a public policy to reduce the interest rates or impose laws that allow private banking or "shadow banking" where lenders set the highest interest rate possible for borrowers. Instead, the Chinese government applies the "one eye shut, one eye open" policy to let private lenders have high interest rates, while rescuing private enterprises for a short time. It is clear that in the meantime, some private borrowers can have more time and more money in trying to keep their business out of bankruptcy. However, is it still the case that those borrowers have to pay back the sky-high interest rate?

The question is difficult to answer. However, it is possible that private enterprises will have to face high interest rates and sky-high debt after a certain period of time. Bamboo Capitalism might work

well during the time that interest rates are controllable, especially for lenders. It will increase the chance for poor farmers and entrepreneurs to endure the initial costs of merchandise, which will then open greater markets. On the other hand, some opportunists use this as a golden time to take advantage of economic development policies.

Conclusion

In conclusion, whether or not the Zhejiang Province can achieve great success today depends a lot on the Banking System, the Farmer Policy and Encouraging Capitalism. These policies will be hard to accomplish without the flexibility in law and the special "one eye shut, one eye open" policy. A policy that is widely practiced by the Chinese government that makes the Chinese economy very unique. The state's economy is neither communist nor pure capitalist. The economic policy is unique and it adjusts and helps the economy grow by intentionally ignoring the law or tightening it, as needed. What we see today is the great effort of the Chinese government encouraging more freedom in the market and more private sectors participating in the economy.

The study of the Zhejiang case shows that the government took over the reform policies introduced by Dang Xiaoping and made adjustments to fit the changing and unexpected economic environment. Unlike the common misconception that reform policies in rural areas are not efficient, the policies do meet the needs of farmers through agricultural insurance and educational programs. The policies are flexible and simple enough for entrepreneurs to go global and borrow money from private lenders. In general, the reform policies are quite well rounded in both rural areas and cities. However, as China goes global, exports trillions of goods and services, and attracts foreign investment, it needs to develop fixed rules and regulations in order to create a safe competitive environment for entrepreneurs. If not, there will be a very thin line between entrepreneurs, businessmen and economic criminals.

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X-Ray Spectral Examination of Supernova Remnant DEM L241

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ABSTRACT

Supernovae are primarily responsible for the input of gas and energy into their host galaxy. Therefore, it is important to understand these supernovae and their remnants. The study of high-energy astrophysics is used to further understand supernovae, supernova remnants (SNRs), and any compact objects associated with these events. SNR DEM L241 is a complex remnant that was investigated using high energy X-ray spectral analysis. DEM L241, located in the Large Magellanic Cloud at a distance known through other independent measurements, contains a bright internal X-ray source, which has been previously interpreted as a Pulsar Wind Nebula (PWN). However, using data from the Chandra Space Telescope, it is shown that this is not the case. The physical properties, evolution of the SNR, and the SNR's interaction with the interstellar medium were calculated using analysis of spatially resolved spectra.

Introduction

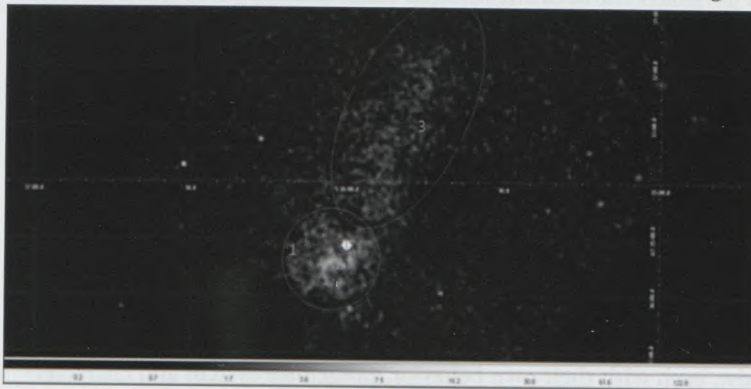
The explosions of massive stars, larger than eight times the mass of the sun, are primarily responsible for the abundance of heavier elements in the universe. Before collapse, these massive stars fuse elements up to iron in their cores. During the core collapse and resulting supernova explosion, heavier atomic nuclei are fused and distributed to the surrounding interstellar medium. The contribution from these explosions is crucial to the understanding of the evolution of a galaxy. SNRs not only enrich and heat the ISM, but offer insight to the nature of the supernova which created the remnant. X-ray images and spectra give us the ability to examine the structure and evolution of hot plasma in the interior of the remnants.

Several types of supernovae exist, each with their own behavior, progenitor system and characteristics. They are primarily categorized into two types, type I and type II and then further delineated by specific spectral features. Type Ia supernovae involve a carbon-oxygen burning white dwarf in orbit with a companion star. Due to the immense gravitational attraction exhibited by the white dwarf, mass is leeched off the companion star. Once the white dwarf reaches a critical mass limit, also known as the Chandrasekhar Limit, it undergoes a run-away thermonuclear explosion. Since the progenitors of these supernovae are evolved white dwarf stars, their respective spectrum is hydrogen poor and rich in carbon and oxygen. Type Ib and Ic supernovae originate from massive stars whose fuel has been expended. Most of the stars reaching this stage have already lost most of their outer hydrogen envelopes or layers due to strong stellar winds or interactions with a companion star. It should be noted that type Ib supernovae are recognized by the presence of helium lines while type Ic are recognized by the lack thereof. Type II supernovae are the result of stars with more than eight solar masses exploding in one of the most intense displays of energy in the universe. These giant stars begin their lives fusing hydrogen into helium. Once this process of hydrogen fusion begins to slow, new fusion of helium begins. These stars run through many fusion cycles until the core is composed of iron. At this point, fusion in the core can no longer take place because the fusion of iron is endothermic, whereas previous fusion processes are exothermic. After this, the star enters a fluctuating phase, expelling its outermost layers as the outward thermal force from fusion begins to subside. With the force from fusion no longer able to support the weight of the star, the star collapses under the force of gravity. The rebounding explosion from this collapse releases a tremendous amount of energy and gas throughout its surroundings. Due to this process, the enrichment of elements such as oxygen, magnesium, silicon, and neon with a slight depletion in iron are key signs of a Type II SN (Weiler 1988).

For the purpose of this study, SNR DEM L241 was analyzed. This study was interested in the following questions: 1) Are all areas inspected actually part of DEM L241, 2) Is the remnant consistent with Type II supernovae, and 3) Is the central compact object a pulsar? This SNR is intriguing in several aspects, including its peculiar morphology and its apparent compact central object along with its apparent PWN, or pulsar wind nebula. A pulsar wind Nebula is a feature where gas is trapped around a remaining neutron star, and generates specific radiation profiles. Using data observed by the Chandrasekhar (Chandra) X-Ray Observatory, both the x-ray morphology as well as the central object was investigated in order to fully understand the evolution of this remnant. This was done by using x-ray spectral analysis to determine physical characteristics of the remnant.

Methodology

For the study of DEM L241, the remnant was separated into four distinct sections based on its morphology in order to perform spectral analysis: the Head, Tail, "S-Curve", and Central Point-Like Source (CPLS) (Fig. 1). These regions were selected based on their notable appearance in association with the remnant. The CPLS was selected because it was the most appropriate candidate for a compact central object, more specifically a PWN. The area denoted as the head region is the area surrounding the source



and appearing as a spherical shell of gas expanding outward. Within the head region, a smaller region was selected due to its unique appearance. This oddly shaped area was named the S-Curve region. Finally, extending back from the main body is a cloud of gas, which was denoted the tail region.

Figure 1: X-Ray Image of DEM L241 generated in DS9. The boundaries outline the respective regions. 1) Head Region 2) S-Curve Region 3) Tail Region. The bright object is the compact central object in question.

Data from the Chandra X-Ray Space Telescope (Sequence Number – 501508 Observation ID 12675 & 13226) was analyzed using Chandra Interactive Analysis of Observations (CIAO) and Sherpa software packages to extract spatially resolved spectra, using the standard processes and procedures as described by the CIAO cookbook (Fruscione et al. 2006). After extracting the data through CIAO, the spectra are then constructed using the Sherpa program contained within the software package. In general, an existing model is chosen that will best fit the data. Fitting the data means selecting the most appropriate mathematical models for the region that will be examined. For the extended sources, the head, the tail, the s-curve regions, the x-ray photoelectric absorption, and Mewe-Kaastra-Leidahl (M-K-L) thermal plasma with variable abundances models were chosen (Arnaud, K.A., 1996). These models were chosen based on previous studies of the object (Bamba et al, 2006, Mewe et al, 1995). These models together have a total of 20 parameters, with one belonging to the photoelectric absorption model and 19 belonging to the M-K-L model. X-ray photoelectric absorption and simple power law models were used for the unresolved central source. To ensure that any outside X-Ray emissions and cosmic rays were excluded in our spectral analysis, background regions were selected off of the SNR and subtracted. By changing the available parameters to more accurately resemble previous models and allowing the program to rerun the algorithm, new fits and models were calculated. However, these spectral fits must be within a certain statistical weight in order for them to be considered valid. Thus, for this analysis, spectral fits which had a reduced statistic of 0.85 – 1.05 were considered to be of statistical validity.

In addition to spectral analysis, timing analysis was performed on each section of the remnant through a software package included with CIAO. Timing analysis makes use of the fact that the photon flux at a given time during the exposure is recorded. A script then compares this photon flux with the later flux at a user-specified time interval. This allows for variability in the flux, and thus variability in luminosity to be detected. When no variability was found near the compact central region, the search was expanded to other regions in order to verify there was no interference. If variability had been found, this would indicate a pulsing central object and could possibly identify the central object as a pulsar. The same data enabled calculations concerning surface brightness and luminosity since the rough distance to the remnant is known. DS9, an astronomical imaging and data visualization application, was used to measure the dimensions of each region in arc seconds, which were then converted into centimeters in order to be used in calculating the physical parameters (density, mass, photon flux, radius, etc.) in appropriate units.

Data

Table 1: Spectral Data from the Head/Rim Region

	abs.nH (cm ⁻²)	kT (KeV)	O	Mg	Fe	Ne	Si	S	Ar	Ca	Norm	Red. Stats	Degrees of Freedom
Free Fit #1	0.35	0.36	0.67	0.64	0.08	0.76	0.30	0.30	0.30	0.30	1.06E-03	0.93	55.00
Free Fit #2	0.50	0.31	0.89	0.64	0.20	0.76	0.30	0.30	0.30	0.20	1.57E-03	1.07	58.00
Fixed Fit #1	0.47	0.31	0.89	0.64	0.20	0.76	1.00	1.00	1.00	0.20	1.28E-03	1.06	64.00
Fixed Fit #2	0.49	0.30	0.89	0.64	0.20	0.76	1.00	1.00	1.00	0.20	1.42E-03	1.06	64.00
Average Values	0.45	0.32	0.84	0.64	0.17	0.76	0.65	0.65	0.65	0.23	1.33E-03	1.03	60.25

Table 2: Physical Properties of the Head/Rim Region

	Volume (cm ³)	Area (cm ²)	Density (at cm ⁻³)	Mass	Photon Flux	Energy Flux	Luminosity (ergs)	Solar Mass
Free Fit #1	1.64E+61	3.60E+04	4.83E-02	1.55E+33	1.70E-04	2.30E-13	6.88E+34	774.54
Free Fit #2	1.64E+61	3.60E+04	5.87E-02	1.89E+33	1.30E-04	1.80E-13	5.38E+34	942.80
Fixed Fit #1	1.64E+61	3.60E+04	5.31E-02	1.70E+33	1.60E-04	2.30E-13	6.88E+34	851.73
Fixed Fit #2	1.64E+61	3.60E+04	5.59E-02	1.79E+33	1.30E-04	1.90E-13	5.68E+34	896.77
Average Values	1.64E+61	3.60E+04	5.40E-02	1.73E+33	1.50E-04	2.10E-13	6.28E+34	866.46

The Head, or outer rim of the SNR, is a region with a radius of approximately 53 arcseconds (") encompassing a volume of roughly $1.64 \times 10^{61} \text{ cm}^3$ with an interstellar absorption to this region of $0.45 \times 10^{22} \text{ cm}^{-2}$. It has an average density of $5.40 \times 10^{-2} \text{ atoms cm}^{-3}$. The predominant variation from typical Large Magellanic Cloud (LMC) element abundances in this region were O, Mg, and Ne (ratios compared to the LMC of 0.84, 0.64, and 0.76) with traces of Fe, Si, S, Ar and Ca. The rim has an average temperature of 0.32 KeV and an average photoelectric absorption toward the region of $0.45 \times 10^{22} \text{ cm}^{-2}$. The total amount of material occupying this region is approximately 870 Msun, with a total luminosity of $6.28 \times 10^{34} \text{ ergs}$. This indicates that the head region is relatively dense, with its luminosity possibly enhanced by interactions with the material from the surrounding interstellar medium.

Table 3: Spectral Data from the S-Curve Region

	abs.nH (cm ⁻²)	kT (KeV)	O	Mg	Fe	Ne	Si	S	Ar	Ca	Norm	Red. Stats	Degrees of Freedom
Free Fit #1	0.48	0.30	0.43	0.46	0.25	0.75	0.30	0.30	0.30	0.30	1.55E-03	0.99	127.00
Free Fit #2	0.49	0.30	0.96	0.81	0.20	0.70	0.30	0.30	0.30	0.30	1.13E-03	1.08	131.00
Free Fit #3	0.62	0.25	0.53	0.47	0.30	0.74	0.30	0.30	0.30	0.30	3.08E-03	0.99	128.00
Fixed Fit #1	0.42	0.34	0.52	0.54	0.20	0.75	0.30	0.30	0.30	0.30	1.00E-03	0.89	128.00
Fixed Fit #2	0.45	0.29	0.29	0.52	0.20	0.64	0.30	0.30	0.30	0.30	1.70E-03	1.05	126.00
Average Values	0.49	0.30	0.55	0.56	0.23	0.71	0.30	0.30	0.30	0.30	1.69E-03	1.00	128.00

Table 4: Physical Properties of the S-Curve Region

	Volume (cm ³)	Area (cm ²)	Density (at cm ⁻³)	Mass	Photon Flux	Energy Flux	Luminosity (ergs)	Solar Mass
Free Fit #1	1.50E+60	2.00E+03	1.93E-01	5.66E+32	1.09E-04	1.60E-13	4.79E+34	282.89
Free Fit #2	1.50E+60	2.00E+03	1.65E-01	4.84E+32	9.66E-05	1.41E-13	4.22E+34	242.02
Free Fit #3	1.50E+60	2.00E+03	2.72E-01	7.98E+32	9.94E-05	1.46E-13	4.37E+34	398.95
Fixed Fit #1	1.50E+60	2.00E+03	1.55E-01	4.55E+32	9.85E-05	1.45E-13	4.34E+34	227.43
Fixed Fit #2	1.50E+60	2.00E+03	2.02E-01	5.93E+32	1.03E-04	1.49E-13	4.46E+34	296.54
Average Values	1.50E+60	2.00E+03	2.02E-01	5.92E+32	1.01E-04	1.48E-13	4.43E+34	295.78

The S-Curve was selected based off of its unique appearance within the Head Region. The average absorption to this region was $0.49 \times 10^{22} \text{ cm}^{-2}$. The average temperature for the region was 0.30 KeV and it carried abundances that varied from the average LMC values of O, Mg, and Ne at 0.55, 0.56, and 0.71, respectively. The S-curve had a calculated volume of $1.50 \times 10^{60} \text{ cm}^3$ and an overall density of $2.02 \times 10^{-1} \text{ atoms cm}^{-3}$ giving the entire region a mass of around 300 times the mass of our sun. The total luminosity for this region was found to be $4.43 \times 10^{34} \text{ ergs}$.

Table 5: Spectral Data from the Tail Region

	abs.nH (cm ⁻²)	kT (KeV)	O	Mg	Fe	Ne	Si	S	Ar	Ca	Norm	Red. Stats	Degrees of Freedom
Free Fit #1	0.54	0.19	0.42	0.57	0.30	0.43	0.30	0.30	0.30	0.30	1.78E-02	0.87	108
Free Fit #2	0.54	0.20	0.62	0.71	0.30	0.61	0.30	0.30	0.30	0.30	1.17E-02	0.85	107
Fixed Fit #1	0.35	0.22	0.35	1.12	0.30	0.35	0.42	0.30	0.30	0.30	4.74E-03	1.09	109
Fixed Fit #2	0.46	0.23	0.75	0.77	0.30	0.30	0.30	0.39	0.30	0.30	4.80E-03	0.81	109
Fixed Fit #3	0.50	0.19	0.30	0.66	0.30	0.30	0.30	0.30	0.30	0.30	1.88E-02	1.02	110
Average Values	0.48	0.21	0.49	0.77	0.30	0.40	0.32	0.32	0.30	0.30	1.16E-02	0.93	108.6

Table 6: Physical Properties of Tail Region

	Volume (cm ³)	Area (cm ²)	Density (at cm ⁻³)	Mass	Photon Flux	Energy Flux	Luminosity (ergs)	Solar Mass
Free Fit #1	6.16E+60	1.66E+04	3.22E-01	3.89E+33	3.37E-04	4.32E-13	1.29E+35	1,943.55
Free Fit #2	6.16E+60	1.66E+04	2.62E-01	3.16E+33	3.20E-04	4.13E-13	1.24E+35	1,579.50
Fixed Fit #1	6.16E+60	1.66E+04	1.66E-01	2.01E+33	3.24E-04	4.00E-13	1.20E+35	1,004.22
Fixed Fit #2	6.16E+60	1.66E+04	1.67E-01	2.02E+33	2.99E-04	3.87E-13	1.16E+35	1,010.04
Fixed Fit #3	6.16E+60	1.66E+04	3.32E-01	4.00E+33	3.45E-04	4.35E-13	1.30E+35	1,999.65
Average Values	6.16E+60	1.66E+04	2.50E-01	3.01E+33	3.25E-04	4.13E-13	1.24E+35	1,507.39

The Tail region extends to the northwest of the main body of the SNR (Head region). The absorption toward this region was found to be $0.48 \times 10^{22} \text{ cm}^{-2}$, with a temperature of 0.29 keV. It had a calculated total volume of $6.61 \times 10^{60} \text{ cm}^3$ with a density of $2.50 \times 10^{-1} \text{ atoms cm}^{-2}$. The elements that showed variation from typical LMC abundances were Oxygen, Magnesium, Iron, Neon, Silicon, and Sulfur at 0.49, 0.77, 0.30, 0.40, 0.32, and 0.32 respectively. The mass of gas based off of the solar abundances was shown to be approximately 1500 Msun.

Table 7: Spectral Data from the Unresolved Central Source

	abs.nH	Photon Index	Normalization	Reduced Statistics	Degrees of Freedom
Head BKG Fit	0.26	1.33	1.02E-04	0.52	149.00
S-Curve BKG Fit	0.31	1.34	1.03E-04	0.55	149.00
ISM BKG Fit	0.24	1.39	1.09E-04	0.55	149.00
Head fixed nH	0.40	1.56	1.36E-04	0.61	150.00
S-Curve fixed nH	0.40	1.47	1.22E-04	0.75	150.00
Average Values	0.34	1.46	1.21E-04	0.62	149.50

Table 8: Physical Properties of the Unresolved Central Source

	Photon Flux	Energy Flux	Luminosity
Head BKG Fit	1.57E-04	7.94E-13	2.38E+41
S-Curve BKG Fit	1.64E-04	9.35E-13	2.80E+41
ISM BKG Fit	1.80E-04	9.39E-13	2.81E+41
Head fixed nH	1.60E-04	8.54E-13	2.55E+41
S-Curve fixed nH	1.58E-04	8.84E-13	2.64E+41
Average Values	1.64E-04	8.69E-13	2.60E+41

It had been previously stated that the relatively hard internal X-Ray source within DEM L241 was a Pulsar Wind Nebula (PWN), the hard energetic outpouring due to the strong magnetic interactions associated with pulsars (Bamba et al 2006). The spectrum for this object is well fit by a typical power law model which is consistent with that expected from a Pulsar/PWN combination. Based on the spectral fits, the absorbing interstellar medium thickness is $0.34 \times 10^{22} \text{ cm}^{-2}$ and exhibits a luminosity of $2.60 \times 10^{41} \text{ ergs}$. The timing analysis showed no variation; therefore the previous assumption from Bamba et al (2006) that the central compact object was a pulsar is unlikely.

Discussion

To answer the first research question, all of the regions show similar characteristics concerning interstellar absorption, temperature, and chemical abundances that enforce the conclusion that all regions are part of DEM L241. The characteristics of DEM L241 are consistent with a Type II supernova due to the high abundances in oxygen, magnesium, and neon present in each of the regions (Table 1-8). As for the evolution of the SNR itself, it appears that after the initial explosion, the cloud expanded in a rough spherical motion. This is suggested through inspection of the difference between head and tail region spectra. After expanding, the head region of the remnant encountered an area of the ISM that was less dense. When this occurred a portion of the SNR expanded and cooled into the ISM to form the tail region. This part of the remnant mixed with the surrounding ISM, enriching it in oxygen. This scenario was inferred from the information gathered from the tail region (Table 5-6). The s-curve was identified to be an area within the head of denser material (Table 3-4). As with the supernova remnant Cassiopeia A (Bamba et al., 2008), filaments (bands of more dense material) can exist within a supernova remnant. The S-curve is thought to be one such filament, formed in the complex shock physics encountered during a supernova event. The remaining puzzle is the presence of the X-ray point source in the head region. Though the location of this object supports the identification as a pulsar or a neutron star, the lack of supporting data makes the identification challenging and quite unreliable. Other possibilities include a foreground or background object, a pulsar without a pulsar wind nebula (PWN), or simply classifying the object as an anomalous X-ray source (Mason, 1976). Unfortunately, no current data exists with the resolution sufficient to make a further classification beyond anomalous. With greater resolution a comparison to the hydrogen column for the point source and the rest of the remnant could be made. At the current resolution the margin of error would cover any difference calculated, thus eliminating the statistical viability of such a measurement.

DEM L241 was found to have chemical abundances, based off of spectral analysis, that are very consistent with that of a type II supernova. Its unique appearance was inferred to be the result of interaction between the expanding SNR and the ISM. However, the central object could not be resolved with the current data and it is suggested that future observation on this remnant focus on determining the characteristics of the compact central object. In spite of this, physical characteristics of the remnant were successfully cataloged due to the increased resolving power of the Chandra X-Ray Observatory.

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